United States
Department of
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**Forest
Service**

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Alternative Goals

1985 Resources Planning Act Program

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United States
Department of
Agriculture

Forest Service

December 1981

To Our Public:

We invite you to assist the Forest Service, U.S. Department of Agriculture, in a planning process that is important to you individually and to the Nation. In brief, we would like you to help select and formulate national goals that will guide the management of our natural resources over the next 50 years.

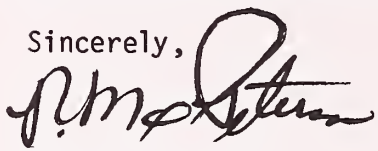
In one way or another, these natural resources influence all of us. They are the foundation of our national wealth: the timber that builds our homes; the range that provides red meat for our tables; the water that slakes our thirst, drives the wheels of industry, and provides irrigation; the fish and wildlife that we hunt or observe; the outdoor recreation that helps us unwind; and the vital mineral and energy resources of oil, gas, and coal needed by industry and consumer alike.

The Forest Service is now developing the 1985 RPA Program, the third one required by the Forest and Rangeland Renewable Resources Planning Act of 1974. This document is part of the process to determine the scope of the 1985 RPA update. In the following pages we present alternative goals for each of 10 opportunity areas. We also describe what the relative implications of each alternative goal would be in terms of investments, outputs, community effects, employment and income, and other key indicators.

We intend to develop and select a single national goal for each of the 10 opportunity areas. We invite your participation, just as we did during formulation of the first and second RPA Programs. Please review the draft alternatives and determine your preferences or suggest others. In addition, you may wish to comment on other points related to these goals, such as the anticipated social, economic, and environmental effects; opportunities noted to meet resource needs; and the implications we have listed for each alternative goal. Your response will be analyzed, evaluated, and used to help us select national goals to guide the 1985 RPA update.

With your assistance, we wish to develop the best 1985 RPA Program possible.

Sincerely,



R. MAX PETERSON
Chief

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This document is part of the process used to determine the scope of the 1985 Resources Planning Act Program update. It presents needs, opportunities, and alternative national goals for the following 10 opportunity areas to be addressed in the Environmental Impact Statement for the 1985 update of the Resources Planning Act Program (RPA) for the Forest Service: Timber Supply; Range Productivity; Recreation Use; Wilderness Use; Wildlife and Fish Habitat; Minerals and Energy Development; Water Yield and Quality; Rural Communities and Human Resources; International Forestry; and Protection and Support.

The purpose of this document is to obtain public views on preferred goals in these 10 opportunity areas. In addition, you may wish to comment on other concerns related to these goals, such as the anticipated social, economic, and environmental effects; opportunities to meet resource needs; and the implications we have listed for each alternative goal. Your responses will be used by the Administration in deciding upon a single set of national goals to guide development of the 1985 RPA Program update.

To help in your review of the alternative goals, a background statement is presented for each of the 10 opportunity areas. The background statement provides a brief overview of the demand-supply outlook; potential social, environmental, and economic effects associated with that outlook; a general description of the resource base; and an outline of opportunities for improving the long-term demand-supply outlook. The background statement is followed by a set of alternative goals. These are followed by information on the basis for selection, and implications of achieving each goal with respect to investments, economic efficiency, outputs, prices, renewable resources, nonrenewable resources, community, employment and income, and technology.

Please identify your goal preferences or suggest alternatives to those presented here. It would be helpful to have the reasons for your preference and any other views with respect to the background information.

Your responses to these alternative goals will be analyzed and evaluated, and the results used to help select national goals for the 1985 RPA update. Send your written response by March 15, 1982, to:

Thomas E. Hamilton
Director, RPA
USDA Forest Service
P.O. Box 2417
Washington, D.C. 20013

Opportunity Areas

The 1979 Assessment identifies many opportunities to increase supplies of renewable resources to meet projected demands. In response to the 1979 Assessment the 1985 RPA Program update will be organized around 10 opportunity areas: Timber Supply; Range Productivity; Recreation Use; Wilderness Use; Wildlife and Fish Habitat; Minerals and Energy Development; Water Yield and Quality; Rural Communities and Human Resources; International Forestry; and Protection and Support.

These 10 opportunity areas are described in this document. A "needs and opportunities" statement, based on the Assessment, is presented to describe the condition or situation for each opportunity area and to provide the basis for the draft alternative goals.

Goals

Goals are statements of the place or situation an organization is striving to achieve. They are expressed as a desired future that operating programs are designed to move toward. They describe a desired condition to be achieved in the future.

We have drafted alternative goals for each opportunity area. These alternative goals describe different possible directions the Forest Service can take to provide its share of the national resources needed by the Nation.

The implication statements that follow the individual alternative goals provide a picture of the probable effects of choosing one goal rather than another.

After your review and comment on these alternatives, one national goal for each opportunity area will be selected as the basis for building the 1985 RPA Program update. In selecting these national goals, consideration will be given to a number of factors, including public response to this document, environmental effects, the relationship between short-term use of the environment and enhancement of long-term productivity, irreversible and irretrievable commitments of resources, demand-supply projections, and specific policies. In addition, the implication statements describe several specific items to be considered such as investments, outputs, prices, consumer costs, and employment and income. Finally, the environmental, economic and budget messages of the President provide administrative guidance.

Planning--In Perspective and Practice

The Resources Planning Act, as amended, and its implementing regulations require the Forest Service to have a three-level integrated planning process:

National: RPA Assessment and Program
Regional: Regional Plan
Local: Forest Land and Resource Management Plans

In addition, State forest resource plans developed by the States for State and private land, as well as research plans, are an integral part of the procedure.

The planning process is a continuous cycle and each plan has a special relationship to other plans. The RPA Program is updated every 5 years to reflect improved or new data, changing national priorities, and revisions required because of the results of other plans. National Forest Plans are updated at least every 10 years; the RPA Assessment is updated every 10 years.

When the national RPA Program is finalized, the Chief of the Forest Service distributes it to each Forest Service Region, Station, and Area. This information is reflected in Regional Plans, Research Plans, and in State and Private Forestry planning.

Regional Plans based on the 1980 RPA Program are being prepared now. The Regional Plan: (1) distributes the Regional RPA Program among the National Forests and describes State and private and research programs; (2) provides direction for National Forest plans; and (3) develops the standards and guidelines for the management of the National Forests. It should be noted that National Forest plans are not limited by the RPA Program. They include one or more alternatives that meet both the RPA output targets and the long-term goals established by Congress in the revised Statement of Policy. The selected alternative for a particular National Forest may vary from the assigned RPA targets but the National Forest plans within a Region should, in aggregate, provide short- and long-term capabilities to meet or exceed the Region's assigned RPA targets.

The Forest and State plans now being developed in response to the 1980 RPA Program will play an important role in shaping the next RPA Assessment (1989) and Program (1985). By collecting and integrating basic data on biological potential, examining management alternatives, and identifying research problems, local plans become the basic building blocks for regional and national planning. The emphasis at all planning levels is on the future and how forest and range land resources can best be used and managed to meet people's needs.

RPA

The Forest and Rangeland Renewable Resources Planning Act of 1974, as amended, directs the Secretary of Agriculture to periodically assess the status of the Nation's forest and range land resources and recommend a Forest Service program for management and use of these resources. It requires the development of an Assessment every 10 years and a Recommended Program every 5 years. The 1985 RPA update will be the third Program prepared under this legislation.

Assessment

The RPA Assessment describes the Nation's renewable resource situation at a specific time and projects future supplies of and demands for these resources. The most recent Assessment was completed in 1979. It shows that demands for resources produced from forest and range lands will increase more rapidly than supplies in the years ahead. However, the Assessment also identifies major opportunities to increase our future supply of almost all renewable resources. A supplement to the 1979 Assessment will be prepared in 1984 to account for any significant changes that have occurred since 1979. For example, it will incorporate results of the 1980 Census, revised economic projections for gross national product and disposable personal income, and updated resource supply demand information where appropriate.

Program

The RPA Program recommends courses of action, based on the findings of the Assessment, for the management and administration of the National Forest System, for Forest Service Research, and for assistance to State forestry organizations and other cooperators through State and Private Forestry

programs. The 1985 Program will chart a course for management through 2035 based on the 1979 Assessment, as updated in the 1984 Assessment Supplement.

Issues

The 1985 RPA Program will respond to long-term national goals. In addition, there has been a continuing effort to identify issues at all levels in the Forest Service planning process. Issues to be dealt with in the 1985 RPA update stem from a review of the 1979 Assessment; public comments received on the 1980 RPA Program and 1979 Assessment; concerns raised during National Forest and Regional planning efforts; various published reports (such as the Global 2000 Report and Society of American Forester's Forest Policy Guidebook); and numerous proceedings, workshops, and symposia.

Because of the extensive public review of issues for the 1980 RPA Program and because public review is an integral part of the Regional and National Forest planning currently underway, a separate review of issues is not planned at this time. Instead, issues are presented as needs and opportunities in each opportunity area. National issues will be identified in the draft 1985 Program and draft Environmental Impact Statement (EIS). These will be available for your review and comment in late 1983.

Future Involvement

When the national goals have been selected, various alternative programs to achieve them will be developed. These will be analyzed in a draft EIS and draft Program on which you will be invited to comment in the Fall of 1983. When public review of the draft EIS and draft Program is completed, a final EIS and final recommended Program will be prepared. The Recommended 1985 RPA Program, accompanied by a Statement of Policy from the President, will be transmitted to Congress in December 1984.

Role of the Forest Service

Meeting national goals will involve many individuals and organizations, both public and private. Conservation groups and industry influence the use and productivity of our Nation's forest and related resources. The private sector is the major producer of forest and range resources and serves a key role in meeting the resource needs of the Nation.

Federal and State Governments also have important roles. The Forest Service provides national leadership in forestry and natural resource conservation and in the improvement of our natural environment. Other Federal agencies also manage forest and range lands, assist State and private forest and range landowners, and conduct research. Moreover, Federal environmental protection programs influence all resource management and use. State agencies continue to fulfill their important roles in land management and environmental protection. Forest Service cooperation with these organizations, both public and private, as well as with the people themselves, is essential for developing and carrying out forest and range conservation programs.

Forest Service activities are divided into three major program areas: National Forest System, State and Private Forestry, and Research. In addition, human and community development activities have become important parts of all three of these program areas.

National Forest System

Managing the country's National Forests and Grasslands is the most visible of Forest Service activities. Everyone who has traveled extensively through the Nation's rural areas, especially in the West, has encountered evidence of the Forest Service at work. National Forests and Grasslands cover about 190 million acres, or 13 percent of the total forest and range land in the country. The Forest Service manages this land on a multiple-use basis, ensuring that it yields commercial products such as wood, forage, water, and minerals, as well as amenities such as recreation, fish, wildlife, and wilderness. The Forest Service manages the more than 4 million acres of National Grasslands as a demonstration of sound, practical land use to encourage similar conservation practices on private lands.

State and Private Forestry

Federal forestry programs extend financial and technical assistance to the States and, through them, to private landowners and others. Private ownerships, plus relatively small areas in State, county, and municipal ownerships, amount to about 52 percent of the Nation's total forest and range land. Through these cooperative efforts, State forestry programs are supported and strengthened. The programs include rural forestry assistance on non-Federal forest lands, forestry incentives on nonindustrial private forest lands, forest insect and disease control on all lands, forestry assistance for urban and smaller communities, rural fire prevention and control on non-Federal forest lands and other rural lands, management assistance to State Foresters and other State officials, and provision of new technology to all landowners.

Research

Supporting forest and range activities on all landownerships involves a comprehensive research program that seeks to solve important problems related to the protection, management, and wise use of forest and range land through the development of new knowledge and technology. Distributed throughout the major forest areas of the country, eight Forest Experiment Stations carry on research in varied fields such as silviculture, soils, insects, diseases, hydrology, economics, engineering, wildlife, recreation, and urban forestry. Research programs are planned jointly with the Nation's 60 forestry schools through the National/Regional Agriculture Research Planning system. The Forest Products Laboratory also devises new and better ways to use wood.

The ultimate goal of this effort is to increase the productivity of public and private forest and range land while maintaining or enhancing environmental quality.

Human and Community Development

The primary mission of human and community development activities is to help people and communities help themselves within the context of forest and range land management. Various programs provide employment, job training, and environmental education for youth and senior citizens, many of whom are economically disadvantaged. Others include fire protection, open and green space management, rural development activities that enhance the livability of small towns and rural areas, and technology to improve management of community forests. Needed work is performed in resource management, environmental protection, and facilities improvement.

Needs and Opportunities

The Demand and Supply Outlook

Timber increased from a little over 11 billion cubic feet in the late 1950's to nearly 14 billion in the late 1970's. In response to the surge in housing needs resulting from the baby boom of the 1950's and 1960's and recent low levels of construction, the demand for timber is likely to rise rapidly in the 1980's. Longer run projections, based on expected increases in population, economic activity, and a continuation of the price trends in the 1950--76 period, show that demands will continue to grow and, by 2030, be more than double the levels of the late 1970's. The supplies of timber that will be available to meet these demands, assuming a continuation of recent trends in investments in forest management, show slower increases. This will result in rapid increases in the relative prices (net of general inflation or deflation) of timber and timber products as the price system brings about an equilibrium between demands and supplies.

Social, Economic, and Environmental Effects

Consumers will suffer the greatest losses from rising relative prices of timber products. Home buyers will be the most affected. By 2030, the projected increase in softwood lumber prices will result in higher housing costs and a 7-percent reduction in the number of dwelling units built. In total, it is estimated that in 2030 consumers will pay some $7 billion more for wood products and competing materials because of insufficient softwood timber to meet demands in order to maintain prices of lumber and plywood at the 1977 level.

Timber industry employment in 2030 will be some 90,000 person-years below the levels that would have existed if softwood timber supplies were increased to meet demands at 1977 price levels. Effects on total employment in most timber-producing regions will be much larger because of impacts on trade, service, and other industries. Such impacts are especially critical because of the high rates of unemployment frequently found in communities in forested rural areas. Part of the loss of employment in timber industries and timber-producing regions will be offset by increased employment in other industries and regions.

There are also important implications for the primary timber-processing industries, particularly for the lumber industry. With relative price increases of the sizes expected, the demand for lumber by 2030 will be some 11 billion board feet below that which would have existed without the increase in prices. This is a measure of market loss for the lumber industry.

Rising prices in the United States will also constrain the potential for export. Exports of most timber products--lumber, plywood, pulp, and paper--are largely determined by the capability of producers to compete on a price basis with producers in other countries.

In addition, continued reliance on timber substitutes will increase impacts on nonrenewable resources and related environmental issues.

Resource Base

There is a large commercial timberland base--482 million acres in 1976--that is capable of producing more than 20 cubic feet of wood per acre per year and that is not reserved for other uses. These timberlands contain some 792 billion cubic feet of roundwood. About 64 percent of the total volume is in sawtimber trees (trees large enough to contain at least one log suitable for the manufacture of lumber). Another 26 percent is in poletimber trees (trees from 5 inches in diameter at breast height to sawtimber size and now, or prospectively, suitable for industrial timber products). The remaining 10 percent of all roundwood volume is in rough, rotten, and salvable dead trees. Some of this latter material may be suitable for lumber and veneer, but most of it is usable only for pulp, fuel, and other products where log quality requirements are flexible.

About a quarter of the wood fiber in a tree is in the tops, limbs, bark, and the part of the tree normally left as a stump. This fiber is also usable for pulp and fuel. In addition, there are substantial volumes of logging residues and urban wood wastes that can be used for similar purposes.

Softwoods predominate in the Nation's timber inventory. There is a total of 456 billion cubic feet of softwood growing stock including 1,985 billion board feet of sawtimber. The largest portion of the softwood timber inventory, some 46 percent of all softwood growing stock and 51 percent of the sawtimber, is on the National Forests. Most of this is in the western United States. Another 27 percent of the softwood growing stock (22 percent of the sawtimber inventory) is in nonindustrial private ownerships, largely those in the East. Sixteen percent is in forest industry ownership. Over half of this is in the West.

Hardwood growing stock inventories total 255 billion cubic feet. About 70 percent of these inventories are on nonindustrial private ownerships and 13 percent on forestry industry ownerships. The bulk of the hardwood timber in these ownerships is in the East, about equally divided between the North and South. The National Forests contain only 8 percent of the hardwood growing stock inventory.

Opportunities

With increased private and public investments in management, research, and assistance programs to improve utilization and increase net annual growth, the Nation's timber resources can meet foreseeable domestic and export demands.

The opportunities for improved utilization include:

- -- Utilizing unused wood materials, including hardwoods that are potential substitutes for softwoods.

- -- Improving efficiency in manufacturing and construction.

-- Extending the useful life of wood products by preservative treatments, improving designs of new structures, and renovating and maintaining existing structures rather than replacing them.

-- Increasing educational and technical assistance to timber processors and users.

-- Developing markets for unused wood materials including hardwoods.

Opportunities to increase net annual timber growth include:

-- Regenerating nonstocked and poorly stocked areas, harvesting and regenerating mature stands, and converting existing stands to more desired species.

-- Applying intensive timber management practices such as spacing control, fertilization, planting genetically improved trees, and vegetation control.

-- Using management, control, and harvesting practices that reduce losses caused by natural mortality (suppression), undesirable vegetation, wildfires, insects, diseases, and poor logging practices.

-- Accelerating harvests on National Forests with inventories of old-growth timber and surplus marketable growing stock.

-- Increasing education and technical assistance to private landowners through cooperative efforts with State Foresters, extension foresters, industrial foresters, and consulting foresters.

-- Providing appropriate cost-sharing, tax, loan, and insurance incentives to increase timber production on private lands.

Beyond these opportunities, research to develop more productive and more cost-effective ways of managing forests and improving utilization, together with expanded efforts in technology transfer, can also help expand future timber supplies.

Intensified management programs are unlikely to have impact on timber supplies and prices much before 2000. However, there are opportunities to increase timber supplies and respond to rising demands in the 1980's. These opportunities include:

-- Accelerating harvests on National Forests in Washington, Oregon, northern California, northern Idaho, and western Montana that have large inventories of old-growth softwood timber. Although volumes cannot be determined until management plans are developed and approved for each individual National Forest[1/], it is

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1/ Under the provisions of the National Forest Management Act, accelerated harvests that depart from nondeclining evenflow on the National Forests can only be determined and implemented after approved management plans are developed for each individual National Forest.

estimated that, with adequate funding for sales preparation, road construction, and the protection of the environment, harvests could be raised by perhaps 0.4 to 0.8 billion cubic feet (2 to 4 billion board feet) a year. Harvest levels on other National Forests can be increased without accelerated harvesting if markets are developed and the necessary funding is available.

-- Increasing salvage of rough, rotten, and salvable dead trees and logging residues on National Forests.

-- Improving utilization of the timber harvested. With expanded programs of research, technology transfer, and technical assistance to processors and users, softwood timber utilization could be raised by 5 to 10 percent in the 1980's.

-- Enlarging harvests on softwood forests in private ownership in the South in the 1980's and 1990's. Large investments in regeneration of harvested softwood stands and related management programs would be necessary to sustain the higher levels of output much beyond 2000.

For the long term, there are opportunities to increase timber growth greatly and improve utilization. For example, by using the opportunities that would yield 4 percent or more on the investment (measured in constant dollars and at equilibrium prices), net annual timber growth could be increased by 12.9 billion cubic feet, a volume roughly equal to the present total timber harvest. Most of the economic opportunities occur on the 58 percent of the commercial timberland in farm and other private ownerships, but the industrial and public forest lands also have significant potential.

Various studies have shown that farmers and other private owners have diverse objectives, widely different characteristics and attitudes, a limited knowledge of existing management opportunities, and varying willingness and capacity to make investments that will increase and extend supplies of timber products. It is also likely that direct benefits, such as income from timber sales, may not accrue to many current owners because of short tenures of life expectancy.

In general sense, these obstacles may limit the owner's attempts to make improvements in utilization.

Except for some large industrial owners, there is little incentive and capital to carry on forest research in the private sector. Thus, adequate research is dependent upon public support.

The problems associated with achieving more intensive management on farm and other private lands and obtaining adequate research support have long been recognized as major impediments to increasing timber supplies. But, what has not been adequately recognized is that many of the investments made to increase timber supplies accrue benefits to society in the form of lower prices for timber products. Lower prices act to reduce the cost to consumers of goods such as houses and furniture, the environmental pollution associated with use of

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substitute materials such as steel and plastics, and the rate of use of nonrenewable resources. Lower prices will also increase timber product exports and contribute to the wood needs of people around the world. On the other hand, lower prices will reduce the incentive for some private owners to invest in management programs.

Timber comprises about a quarter of the value of all the industrial raw materials consumed in the economy. Millions of workers are employed in processing wood products, many in rural areas where timber is the only raw material available to support the local economy. Increased timber supplies and improvements in utilization will contribute in various ways to the quality of life of all members of society.

Alternative Goals and Implications

Alternative Goal 1

MANAGE AND USE THE NATION'S TIMBER RESOURCES TO ACHIEVE A NET EXPORT VOLUME OF TIMBER PRODUCTS AND REDUCE CONSUMER COSTS AS ECONOMICALLY AS POSSIBLE WHILE PROTECTING THE ENVIRONMENT AND PROVIDING OPPORTUNITIES TO USE TIMBERLANDS FOR OTHER PURPOSES.

Basis for Alternative Goal 1

This goal responds to direction from Congress in the P.L. 96-514 Statement of Policy, that revises and modifies the Statement of Policy transmitted by the President to Congress in July 1980, as required by the Resources Planning Act of 1974. In the revision, Congress stated that "...the productivity of suitable forested land, in all ownerships, should be maintained and enhanced to . . . permit a net export of forest products by the year 2030." It also responds to a recommendation in the Report on the National Conference on Renewable Resources, sponsored by the American Forestry Association and 23 other national organizations concerned with renewable natural resources, and a recommendation of the forest industry in an Agenda for Forest Productivity in the 1980's.

Implications of Alternative Goal 1

1. Investments.--Achieving this goal would require large increases in investments in the Forest Service State and Private Forestry programs of technical and financial assistance and in private investments in the years immediately ahead. After the level of investment necessary to achieve the supply objective in 2030 is attained, needs would level off. A substantial part of the assistance in the early years would need to be directed at attaining improvements in utilization--a means of extending supplies in the short run and responding to the rapid rise in demands in the 1980's. In the longer run, the programs must be directed at increasing net annual growth, the only means of producing enough timber to meet the goal. Most of the benefits from these investments would not be realized for several decades.

Investments in National Forest System programs would follow a similar pattern, although the increases in dollars would probably be smaller. To respond to the growth in demands in the 1980's, there would be

a need to fund accelerated harvests and road construction on western National Forests with significant inventories of old-growth timber and to mitigate adverse impacts of the added harvests on the environment and other uses of these timberlands. There would be a related need for larger investments to establish and care for replacement stands. Accelerated harvests and improved utilization are the only practical ways of significantly raising softwood timber supplies above the 1979 Assessment base level projections for the 1980's and 1990's.

Investments in Forest Service Research programs would also follow the patterns described above. To respond to the growth in demands in the 1980's, it would be necessary to initially concentrate a substantial part of the increased funding on utilization research--the best research opportunity to extend supplies in the next few years. There would also be a need for research on ways to minimize the adverse impacts of accelerated harvesting and to increase the efficiency of establishing and managing replacement stands. In a broader sense there will be a rapidly expanding need for research to develop natural or lower cost ways of regenerating stands to desirable species, reduce the lag betweeeen harvest and stand establishment, and lower the cost of intensive management practices.

2. Economic efficiency.--Most of the direct investments necessary to achieve this goal would yield 4 percent or more annually, measured in constant dollars. Some of the investments, and particularly some of the public investments, would yield less than 4 percent in direct returns and may direct capital from more productive uses. The partial analyses that have been made indicate that, when all economic, social, and environmental benefits are considered, they are likely to be substantially above the public and private costs.

3. Outputs.--By 1990, softwood timber supplies would be increased from 1 to 2 billion cubic feet above the base level projections in the 1979 Assessment. By 2030, timber supplies would be increased by 5 to 7 billion cubic feet of softwoods and 0.5 to 1.0 billion cubic feet of hardwoods over the base level projections in the Assessment.

4. Prices.--Softwood stumpage prices would rise fairly rapidly in the 1980's and to a lesser degree in the 1990's. As softwood timber supplies increase after 2000, stumpage prices would begin to decline and, by 2030, would probably be below the 1976 trend level. Such a decline would probably have important adverse impacts on receipts from timber sales on public lands and could adversely affect the management of these lands. The impacts on private landowners would depend on the amount and type of assistance received and timber produced.

The rate of increase in softwood stumpage prices in the 1980's and 1990's will depend on the increase in supplies obtainable through accelerated harvests on the National Forests and improvements in utilization. There would be a decline in hardwood stumpage prices through the projection period.

5. Consumer costs.--Consumer costs of timber products would follow the same pattern as prices, and by 2030, the cost of most timber products would be below recent levels if this goal is achieved.

This would have favorable effects on many major timber product markets, especially housing. Both the quantity and quality of housing would increase. By 2030, consumer savings could be more than $7 billion a year below what they would be, given the equilibrium prices defined in the 1979 Assessment. On the other hand, there would be increased costs to taxpayers to fund the necessary public investments in management and utilization programs.

6. Nonrenewable resources.--To the extent that lumber and plywood are substituted for steel, aluminum, concrete, and plastics, the volume of fossil fuels used and of nonrenewable resources mined and processed would be reduced. The gains would be somewhat offset by the increased need for fossil fuels and metals used in machinery to increase timber production.

7. Environment.--This goal could have favorable effects on the environment. To the extent that lumber and plywood are substituted for steel, aluminum, concrete, and plastics, the environmental effects related to the production of nonwood products would be reduced. This would be offset to some degree by the increased costs and environmental impacts of more intensive timber management and impacts on other uses of commercial timberlands. Minimum legal standards for environmental protection would be met or exceeded.

8. Renewable resources.--With this goal, the opportunities to use the land for most other purposes would be enhanced. This would, however, require substantial increases in public and private funding to mitigate the impacts of intensified management and increased timber harvests.

9. Community.--Achieving this goal would have major impacts on timber inventories, net annual growth, level of timber harvests, and economic activity in all forested regions. These impacts would be largest on the higher site lands in private ownership on the Pacific Coast and in the South where the economic opportunities for management intensification are concentrated. Most of the investments to increase softwood timber growth and the increase in softwood timber are likely to be in these regions. There are also likely to be increases in the harvests of hardwood timber, chiefly in the East.

Increases in timber harvests and shifts in the relative importance of regions as sources of timber are certain to bring about shifts in the location of processing plants and timber-based employment--with associated impacts on communities. The changes will be largest in the South, where most of the potential exists for increasing softwood timber growth. There will also be important impacts in the North, as hardwood harvests increase, and on the Pacific Coast, as first the old-growth forests are harvested and next harvests from second-growth forests increase.

The timber resources on a number of western National Forests and their associated communities would be affected in significant ways in the 1980's and 1990's. In general, the volume of harvests would rise; the old-growth inventory would be reduced

rapidly; and costs would increase for regenerating timber stands, protecting the environment, and enhancing the opportunities to use the land for other purposes.

Receipts from National Forests shared with the States in the West will rise dramatically under this goal in the 1980's and 1990's. The price-dampening effect of increased sale volumes, however, will reduce the rate of increase per unit of timber harvested after 2000 and offset part of the effects of increased total volumes. Direct receipts to the Federal Treasury from stumpage sales and taxes from timber-based income would follow a similar pattern.

10. Timber-processing industries.--Achievement of this goal would greatly expand the volume of sales, and presumably the profitability, of most timber-processing industries. The growth would be largest in the softwood lumber industry.

11. Employment and income.--Achieving this goal would result in increases in employment and income in the forest industries in most forested regions over the levels that would prevail under the base and equilibrium projections of timber supply shown in the 1979 Assessment. These gains in employment and income could be offset, in part, by reductions in other industries and regions.

12. International trade.--Under this goal, the United States would be a net volume exporter of timber products by 2030. This would have favorable effects on domestic timber-processing industries, including both the volume of production and employment. There would be a large timber products trade surplus in value terms. Benefits would accrue to importing countries, but there would probably be unfavorable effects on the forestry sectors in timber product exporting countries, including Canada and many developing countries.

13. Technology.--Research will concentrate a substantial part of the increased funding on utilization--the best research opportunity to extend supplies in the next few years. Research will also analyze ways to minimize the adverse impacts of accelerated harvesting and to increase the efficiency of establishing and managing replacement stands. In a broader sense, there will be a rapidly expanding need for research to develop natural or lower cost ways of regenerating stands to desirable species, reduce the lag between harvest and stand establishment, and lower the cost of intensive management practices.

Alternative Goal 2

MANAGE AND USE THE NATION'S TIMBER RESOURCES, USING ECONOMIC OPPORTUNITIES TO INCREASE AND EXTEND TIMBER SUPPLIES AND INCREASE EXPORTS WHILE PROTECTING THE ENVIRONMENT AND PROVIDING OPPORTUNITIES TO USE TIMBERLANDS FOR OTHER PURPOSES.

Basis for Alternative Goal 2

This goal responds to the direction in the Resources Planning Act of 1974 and the National Forest Management Act of 1976 to use economic efficiency as a major criteria for making investments in renewable

resource programs. It also responds to the view that investments in timber management and utilization programs should yield direct rates of return comparable to the opportunity cost of capital in the private sector.

Implications of Alternative Goal 2

The implications of this goal are basically the same as those described for alternative goal 1. They would, however, differ in degree: investments in State and Private, National Forest, and Research programs would be lower and all would yield direct rates of return of 4 percent or more in constant dollars; prices would continue to increase, but at a reduced rate; exports would rise although there would still be a net import balance on a volume basis (there may be a surplus in value terms); and impacts on the environment, nonrenewable resources, timber-processing industries, employment and income, and the timber resource would be in the same direction, but at lower levels.

By 1990, softwood timber supplies would be increased from 1 to 2 billion cubic feet above the base level projections in the 1979 Assessment. By 2030, softwood timber supplies would be increased by 4 to 6 billion cubic feet and hardwoods by 0.5 to 1 billion cubic feet over the base level projection. These increases are below those attainable under goal 1.

National Forest receipts shared with States and direct receipts to the Federal Treasury from stumpage sales, taxes from timber-based income, and Federal expenditures on programs would follow the same time pattern as in alternative goal 1. The rate of increase per unit of stumpage sold will be higher than in alternative goal 1, but there would be a lower volume of sales.

Alternative Goal 3

MANAGE AND USE THE NATION'S TIMBER RESOURCES, USING THE BEST DOMESTIC ECONOMIC AND INTERNATIONAL TRADE OPPORTUNITIES TO SATISFY PROJECTED DOMESTIC DEMANDS WHILE PROTECTING THE ENVIRONMENT AND PROVIDING OPPORTUNITIES TO USE TIMBERLANDS FOR OTHER PURPOSES.

Basis for Alternative Goal 3

This goal also responds to the direction in the Resources Planning Act of 1974 and the National Forest Management Act of 1976 to use economic efficiency as a major criteria for making investments in renewable resource programs. In addition, it responds to the views that increases in the prices of renewable resource products are desirable from the standpoint of providing incentive for increased investments in management and utilization programs and that the rates of increase in prices in the 1950--76 period are acceptable from the standpoint of economy and the society.

Implications of Alternative Goal 3

Most of the implications of this goal differ only in degree from those described in alternative goals 1 and 2. Investments in State and Private, National Forest, and Research programs would be lower, and all would yield more direct returns than 4 percent in constant dollars. Impacts on the environment,

nonrenewable resources, timber-processing industries, employment and income, and the timber resource would be reduced. In contrast, however, stumpage and timber product prices would continue the trends or levels established in the 1950--76 period. For softwood stumpage and lumber there would be increases--about 0.7 percent per year for lumber. Total exports would not change significantly in volume terms, and net imports would continue to rise (there may be a deficit in value terms).

By 1990, softwood timber supplies would be increased from 1 to 2 billion cubic feet over base level projections in the 1979 Assessment. By 2030, softwood timber supplies would be increased by 2.5 billion cubic feet and hardwoods by 0.3 to 0.5 billion cubic feet above the base level projections. These increases are substantilly below those attainable under goals 1 and 2.

National Forest receipts shared with States and direct receipts to the Federal Treasury from stumpage sales, taxes from timber-based income, and expenditures on programs would rise through the projection period. The rate of increase per unit of stumpage sold will be higher than in goals 1 and 2 and the total volume of sales lower.

Comparison of Timber Supply Alternative Goals and Implications

	Goals		
	Goal 1	Goal 2	Goal 3
	Manage and use the Nation's timber resources to achieve a net export volume of timber products and reduce consumer costs as economically as possible while protecting the environment and providing opportunities to use timberlands for other purposes.	Manage and use the Nation's timber resources, using economic opportunities to increase and extend timber supplies and increase exports while protecting the environment and providing opportunities to use timberlands for other purposes.	Manage and use the Nation's timber resources, using the best domestic economic and international trade opportunities to satisfy projected domestic demands while protecting the environment and providing opportunities to use timberlands for other purposes.
	Implications		
Investments	Largest increase	Moderate increase	Smallest increase
Outputs	Increase and extend softwood supplies by 5-7 BCF by 2030	Increase and extend softwood supplies by 4-6 BCF by 2030	Increase and extend softwood supplies by 2.5-3.5 BCF by 2030
	Increase softwood timber supply from 1-2 billion cubic feet above base level projections in the 1979 Assessment by 1990		
	Increase and extend hardwood supply by 0.5-1.0 BCF by 2030		Increase and extend hardwood supply by 0.3-0.5 BCF by 2030
Economic efficiency	Direct returns on some investments would be below 4 percent in constant dollars. Economically efficient when all benefits are considered	Direct returns on investments would be 4 percent or more in constant dollars	Direct returns on investments would be more than 4 percent in constant dollars
Prices	Rise before 2000 then decline for softwoods and throughout for hardwoods	Same time pattern. Change after 2000 is smaller	Continue to rise in line with 1950--76 trends
Consumer cost of timber prices	Below recent levels by 2030	Same timber pattern. Smaller changes after 2000	Continue to rise in line with 1950-76 trends
Nonrenewable resources	Some increase in substitution of wood products for mineral-based products	Limited increase in substitution of wood products for mineral-based products	Little or no change in substitution effects between wood and mineral-based products
Environment	Some favorable and unfavorable	Same as goal 1 but to a lesser degree	Same as goal 2 but to a lesser degree
Renewable resources	Opportunities enhanced with investments	Same as goal 1 but to a lesser degree	Same as goal 2 but to a lesser degree
Timber communities	Largest favorable impacts	Moderate favorable impacts	Smallest favorable impacts

Implications (continued)

Timber industry	Greatly expand volume of sales	Moderate expansion of volume of sales	Least expansion of volume of sales
Employment and income	Largest increase	Moderate increase	Smallest increase
International trade	Net exporter in volume terms by 2030	Exports would rise but net import volume balance would remain	No rise in exports; rise in imports. No net import volume change
Technology	Largest increase in research	Moderate increase in research	Smallest increase in research

Needs and Opportunities

The Demand and Supply Outlook

The 1979 Assessment projected that demand for range grazing by domestic animals would grow 46 percent by 2030, rising from 213 million to 310 million animal-unit-months (AUM's). Substantial increases in the demands from range and timber lands are expected for wildlife forage and habitat and for other uses such as outdoor recreation and watersheds. Nearly all of the demand for domestic and animal grazing on rangelands and grazeable forests will occur in the contiguous 48 States.

Forage supply can be substantially increased from rangelands and grazeable forests by improving range condition, intensifying management, and utilizing unused and transitory ranges. More than half of the range in the contiguous 48 States is in unsatisfactory condition; that is, producing at less than 40 percent of its natural potential productivity. However, Soil Conservation Service analyses have concluded that range conditions improved in the last 10 years.

Social, Economic, and Environmental Effects

Failure to increase range forage production has some implications. It means, for example, that increased demands for domestic animal forage must be supplied from other sources such as grains and harvested roughages. This can mean either higher production costs, including energy demands, or a reduction in the amount of red meat consumed per capita.

Management of the Nation's rangeland requires a flexible approach because of diverse vegetation, soil types, and conditions. Probably a much higher proportion of forage increases will be produced from private holdings, as opposed to Federal range, because the forage production potential of private range is generally higher and such lands respond favorably to cost-effective vegetation treatment.

Range in satisfactory condition provides the greatest opportunity for economic growth for ranch and farm operators. This, in turn, increases employment and income on ranches, farms, and associated dependent communities. Satisfactory range conditions contribute to soil stability, protect soil productivity, and enhance other resource uses. In some cases, opportunities for restoration of range in poor condition may be limited because costs exceed returns.

Resource Base

In total, 883 million acres, or 39 percent of the total area of the United States, is classified as rangeland (this includes pinyon-juniper and chaparral-mountain shrub ecosystems often classed as forest land). About 74 percent of this area, or some 652 million acres, is in the contiguous States. There is an additional 553 million acres of forest land, much of it suitable for grazing. Over half of the rangelands in the contiguous States are in private ownership and are located mainly in the Great Plains and Rocky Mountains.

The rangelands and grazeable forest lands have the capacity, under more intensive management, to supply the projected increases in demands. The estimated biological potential of these lands is 566 million animal-unit-months of grazing, nearly three times the present level of production and nearly twice the projected level of demand in 2030.

Opportunities

There is a wide range of opportunities available to increase the supply of forage for domestic livestock and wildlife and to improve the ecological condition of grazing lands:

-- Improve range conditions with improved grazing systems and livestock management practices.

-- Make range improvements such as fencing and development of water supplies to bring currently unused and underused rangeland into higher productivity.

-- Rehabilitate depleted ranges and increase forage production by seeding palatable grasses and legumes. This may also provide forage during periods when other plants are not available.

-- Control shrubs such as mesquite and sagebrush that invade rangelands and reduce forage production.

-- Control poisonous plants, such as larkspur, in the Rocky Mountains.

-- Control noxious weeds.

-- Control insects and diseases that destroy vegetation and limit natural seed production.

-- Manage and manipulate chaparral brushland for potential benefits to increase range outputs, as well as fisheries, wildlife, soil, water, fire suppression, and recreation. Chaparral also has potential as biomass for pulp and fuel.

-- Increase grazing on forested land, where appropriate. Timber management practices such as harvesting, thinning, and site preparation usually result in a temporary increase in forage production as well as improvement of the timber stand. The timing and intensity of these activities can increase the amount and, to some extent, the period of forage availability.

-- Demonstrate and practice sound principles of range management technology on National Forest System (NFS) grazing lands and cooperate with other departments and agencies to make range management technology available to public and private rangeland managers.

-- Intensify research to develop cost-effective methods to revegetate disturbed rangelands; control undesirable insects, diseases and plants; and develop improved plants, especially nitrogen-fixing varieties. Use current research results and emphasize development of equipment and plant materials, for example, to implement research.

Alternative Goal 1

MANAGE NATIONAL FOREST SYSTEM RANGE TO SUPPLY A GREATER SHARE OF THE DEMAND FOR DOMESTIC LIVESTOCK AND WILDLIFE FORAGE, FOSTER A PRODUCTIVE LIVESTOCK INDUSTRY AND STABLE RURAL COMMUNITIES, AND PROTECT AND IMPROVE RANGE ECOSYSTEMS.

Basis for Alternative Goal 1

This goal provides maximum opportunities for management and use of the NFS range forage resource, while protecting and improving the ecological condition of range ecosystems. The 15.5 million animal-unit-months of stock grazing from National Forest System lands represent a larger share of the projected demand (310 million animal-unit-months for grazing) by 2030 than what the Forest Service currently supplies. Accomplishing this will require increasing coordination with other resource uses, utilizing transitory range opportunities and intensive grazing on the most productive lands. In addition, intensifying grazing on the most productive sites would also involve increased used of grazing opportunities on National Forests in the eastern United States. Low-condition rangelands, presently grazed with little opportunity for improvement, would have livestock grazing phased out. Discontinuous grazing systems such as rest-rotation would be employed, along with introduction of improved forage species on suitable sites. Although the most economic opportunities would be sought, direct cost to the Government would be substantial and would exceed market value for the forage.

Implications of Alternative Goal 1

1. Investments.--Achieving alternative goal 1 would require increased and accelerated investments in range management and improvements on National Forest System ranges.

State and Private Forestry program funding for technical and financial assistance through other Federal and State agencies to improve forage production on non-Federal forested ranges would increase accordingly.

Funding for Research would be greatly increased in an effort to develop more cost-effective techniques to increase forage production and improve range conditions on ranges of all ownerships, but would emphasize developing techniques applicable on National Forest System rangelands.

2. Outputs.--Improved management on National Forest System ranges would increase production from 9.9 to 15.5 million AUM's by 2030 or an increase of 57 percent.

3. Prices.--Price of red meat would be relatively unaffected.

4. Economic efficiency.--Although the most economic opportunities would be sought, direct costs to the Government would be substantial and would exceed market value of the forage discounted to the present 7-1/8-percent discount rate. At a 4-percent discount rate, present net benefits would exceed present value costs. Unit cost for operation and

maintenance would decrease as grazing is intensified on the most productive areas. Unit costs for capital investments would also decrease.

5. Nonrenewable resources.--Alternative goal 1 would require an increase in the amount of fossil fuel used per AUM produced. Most of the projected range improvement practices are energy intensive.

6. Renewable resources.--Attainment of alternative goal 1 would increase physical productivity (yield per acre) and decrease economic productivity (return per dollar invested). It would provide for the improvement of those ranges in unsatisfactory condition. Opportunities to use the land for other purposes would be improved. This improvement would require substantial increases in funding to accommodate intensified management and increased range production. It fully protects the environment and provides for the legal minimum standards for soil, water, wildlife, cultural resources, recreation, and other resources.

7. Community.--Alternative goal 1 would expand livestock numbers on NFS ranges and, presumably, the profitability of the livestock, meatpacking, and related industries in local communities.

8. Employment and income.--Alternative goal 1 would increase income of locally dependent livestock industry and employment and personal incomes in the dependent rural communities, particularly in the western United States.

9. International.--Alternative goal 1 would exceed the current Forest Service share of the projected national demand for red meat and could contribute to a slight reduction of meat imported from foreign sources.

10. Technology.--This goal would provide technology to produce forage at a level commensurate with the production potential on range and associated forest lands, while protecting and enhancing the ecosystems. Research will include development of standardized inventory systems, development of improved management methods for rangelands, and identification of cost-effective range treatments and management practices.

Alternative Goal 2

MANAGE NATIONAL FOREST SYSTEM RANGE TO SUPPLY ITS CURRENT SHARE OF THE PROJECTED DEMAND FOR DOMESTIC LIVESTOCK AND WILDLIFE FORAGE, CONTRIBUTE TO MAINTENANCE OF THE LIVESTOCK INDUSTRY AND RURAL COMMUNITIES, AND PROTECT AND IMPROVE RANGE ECOSYSTEMS.

Basis for Alternative Goal 2

This goal responds to the direction from Congress in the revised President's Statement of Policy for the 1980 RPA Program. In the revision, Congress stated that ". . . (range) lands should be maintained and enhanced, including their water and other resource values, so that they can annually provide 310 million animal-unit-months of forage by the year 2030, along with other benefits." In addition, they stated ". . . that the high bound program may not be sufficient to accomplish the goals

contained in this statement, particularly in the area of range resources."

Under this goal, the National Forest System would be managed to supply in the year 2030 the same share of the projected demand for forage as they currently supply, or a projected 14.5 million animal-unit-months. Accomplishing this will require increasing coordination with other resource uses, utilizing transitory range opportunities, and managing livestock grazing use on the productive lands. Rangelands in low ecological condition would be improved. Where such lands are presently grazed and cannot be improved on a cost-effective basis, grazing would be phased out. In addition to intensive grazing on the most productive sites, grazing use would also involve increased usage of grazing opportunities on National Forests in the eastern United States. Although the most economic opportunities would be sought, direct cost to the Government would be substantial and would probably exceed market value for the forage.

Implications of Alternative Goal 2

The implications of this goal are basically the same as those described for alternative goal 1. National Forest System and State and Private Forestry goals would differ in degree (i.e., funding needs would be lower). Outputs from National Forest System ranges would be about 14.5 million AUM's of grazing by 2030.

Although the most economic opportunities would be sought, direct cost to the Government would be substantial and would probably exceed market value for forage at a 7-1/8-percent discount rate. Present net benefits would exceed present value costs at a 4-percent discount rate. Unit cost for operation and maintenance would decrease as grazing is intensified on the most productive areas. Unit costs for capital investments would also decrease.

This goal could contribute to a slight reduction in meat imported from foreign sources. Impacts on the environment, nonrenewable resources, livestock and related industries, employment and income, and range resources would be reduced. Research would concentrate on protecting and enhancing the quality of multiple resource values on rangelands and associated forest land.

Alternative Goal 3

MANAGE NATIONAL FOREST SYSTEM RANGE TO SUPPLY FORAGE FOR DOMESTIC LIVESTOCK AND WILDLIFE WHERE IT IS COST-EFFICIENT, WHILE PROTECTING THE INCOME AND EMPLOYMENT OF DEPENDENT LIVESTOCK OPERATORS AND RURAL COMMUNITIES, AND PROTECT AND IMPROVE THE QUALITY OF RANGE ECOSYSTEMS.

Basis for Alternative Goal 3

This goal would strive to meet, from the National Forest System, the 1980 RPA Program projected output of 10.6 million animal-unit-months of forage production by 2030. The program is designed to provide grazing use where it is ecologically and economically efficient to do so and is adjusted to meet social, political, and environmental needs. It covers correction of serious range deterioration,

while maintaining short-term stability of dependent livestock operators. Only the best opportunities for cost-efficient grazing would be funded. Some intensification of grazing would occur on the most productive areas where investment costs are reasonable. Ecological conditions would be improved where treatments are cost-effective. Present value benefits will exceed present value cost to the Government at a 7-1/8-percent discount rate.

Implications of Alternative Goal 3

Most of the implications of this goal differ only in degree from those described in alternative goals 1 and 2. Outputs from National Forest System ranges would be 10.6 million AUM's by 2030. Funding needs for National Forest System, as well as State and Private Forestry programs would be lower, and impacts on the environment, nonrenewable resources, livestock industry, employment and income, and range resources would be reduced. Only the best opportunities for cost-efficient grazing would be funded. Where improvements would not be cost efficient, livestock would be removed. Market value for the forage will exceed direct cost to the Government at a 7-1/8-percent discount rate.

The major economic implication is that major responsibility for supply of forage is shifted to the private sector. Research would seek to provide a cost-effective balance between grazing use and range productivity, while maintaining environmental value and socioeconomic stability of dependent rural communities.

Comparison of Range Productivity Alternative Goals and Implications

	Goals		
	Goal 1	Goal 2	Goal 3
	Manage National Forest System range to supply a greater share of the demand for domestic livestock and wildlife forage, foster a productive livestock industry and stable rural communities, and protect and improve range ecosystems.	Manage National Forest System range to supply its current share of the projected demand for livestock and wildlife forage, contribute to maintenance of the industry and rural communities, and protect and improve range ecosystems.	Manage National Forest System range to supply forage for domestic livestock and wildlife where it is cost-efficient, while protecting the income and employment of dependent livestock operators and rural communities, and protect and improve the quality of range ecosystems.
	Implications		
Investments	Large increase in public investment	Moderate increase in public investment	Least increase in public investment
Outputs from NF	15.5 milion AUM's by 2030	14.5 million AUM's by 2030	10.6 million AUM's by 2030
Prices	Slightly lower prices to consumer	Slightly lower prices to consumer	No change
Nonrenewable resources	Most use of fuel	Moderate use of fuel	Least use of fuel
Other renewable resources	- Increase range productivity - Improve ranges in unsatisfactory conditions - Overall improvement for other resources	Moderate improvement	No change
Community	Most help to livestock industry in local communities	Moderate help to livestock industry to communities	Little help to livestock industry, major responsibility for forage supply shifted to the private sector
Employment and income	Greatest increase in local communities	Moderate increase in local communities	Little increase in local communities
International	Slight reduction of imports		No reduction of imports
Economic efficiency	Costs to Government would exceed benefits	Costs to Government would probably exceed benefits	Benefits would exceed costs
Technology	Provide for a level commensurate with production potential on rangelands	Concentrate on protecting and enhancing resource values on rangelands	Provide a cost-effective balance between use and productivity

Needs and Opportunities

The Demand and Supply Outlook

In 1980, National Forest System lands received 233 million recreation visitor days (RVD) 1/ of recreation use. In fact, more than 43 percent of recreation use reported on all Federal lands occurred within the Nation's 154 National Forests. And projections based on expected changes in population, personal income, geographic distribution, age structure, workweek, and work schedules indicate continued increases in demand for recreational opportunities on forest and range lands.

Ninety percent of the population lives within 200 miles of a National Forest. Recent trends indicate people generally stay longer on each visit to National Forest System lands because of the wide variety of recreational opportunities available on them.

Many States in the West are experiencing a dramatic increase in population caused by a variety of factors such as the mineral-energy boom. Much of this growth is occurring in and adjacent to rural communities and is expected to continue for the next 20 to 30 years. The National Forests have traditionally supplied a large portion of these recreational opportunities.

On the other hand, without substantial modifications of existing programs and facilities, increased demand may lead to overuse of some recreational facilities close to metropolitan areas because the cost of fuel may inhibit travel.

Recreational opportunities are defined by a classification system called the Recreation Opportunity Spectrum (ROS).2/ The ROS is divided into six classes, each defined in terms of a combination of activity, setting, and experience opportunities. The classes are primitive, semiprimitive nonmotorized, semiprimitive motorized, roaded natural, rural, and urban.

The primitive class allows little or no modification of the natural environment and is characterized by limited or difficult access, the absence of facilities, and relatively few people. The urban class, at the other end of the spectrum, is characterized by highly developed facilities such as ballfields, swimming pools, and developed attractions with significant resource modification. One can expect to find numerous people, considerable capital investments in elaborate facilities, and substantially improved access.

Demands for activities associated with forest and range lands classed as primitive and semiprimitive

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1/ A visitor-day is any 12-hour aggregate of recreation use.

2/ The Recreation Opportunity Spectrum (ROS) provides a framework for defining the types of outdoor recreation opportunities available and for identifying that portion of the spectrum a given National Forest might provide.

are expected to increase by 60 to 100 percent by 2030; demands for activities in more developed settings are also expected to increase substantially. For example, the 1979 RPA Assessment shows that, by 2030, the demand for developed camping can increase by 145 percent, driving for pleasure by 40 percent, downhill skiing by 234 percent, and cross-country skiing by 180 percent. Trends also suggest that nature appreciation, the desire for clear water, and interest in the preservation of open space will also increase.

These demand estimates are based on the assumption that recreational opportunities will be supplied free or below cost to the consumer. Increasing user fees to cover the costs of providing recreation services and opportunities may dampen projected demand.

The bulk of forest and range lands are located some distance from our Nation's most populated areas. Over 50 percent of the population lives in the north central and northeastern regions, which have only 10.5 percent of the forest and range land acreage, 91 percent of which is privately owned. In contrast, the Pacific Coast region has 13.6 percent of the population and 33.4 percent of the forest and range lands, with only 12 percent of these 520 million acres in private ownership. Private lands will continue to be an important source of recreational opportunities, especially in the Northeast, South, and Midwest where there is less public land. However, the projected loss of forest and range land to other uses will curtail opportunities to supply outdoor recreation.

Limitations on public use of private industrial and nonindustrial lands for recreational purposes suggest that demands will tend to be concentrated on public lands and could be even greater than projections indicate, particularly if current policies of providing Federal recreational facilities free or below cost are continued. Because of these policies, investments for needed facilities have been deferred and may not keep pace with demand in the future. It also suggests a need for more positive inducements and technical assistance to landowners to bring about an increase in private land recreational opportunities. Research efforts must continue to search for new ways to efficiently measure use, forecast trends in demand, and improve measurement for recreation while maintaining production of other National Forest benefits.

Social, Economic, and Environmental Effects

The recreation demand and supply situation of the National Forest System has important implications. The following examples indicate the magnitude of the Forest Service role as a recreation supplier. At the end of fiscal year 1980:

Total Acreage

National Forest System lands totaled 25 percent of the federally owned lands in the United States.

Campgrounds

Over 4,800 National Forest facilities comprised 43 percent of the national Federal supply.

Downhill skiing

Over 95 percent of ski area facilities and skiing use on Federal land occurred on the National Forests.

Trail mileage

National Forests had over 85 percent (97,000 miles) of all trails on Federal lands.

As people's expectations have changed, recreational facilities have become more elaborate and more expensive to construct and maintain. Public use of the National Forests could be severely limited without supplemental funding sources. Increased user charges would substantially help to correct this problem.

However, expenditures for outdoor recreational travel and activities are beneficial to local economies supported by these activities, especially in conjunction with direct sales of recreational goods and services. Industries producing recreational goods and services stimulate local economies through employment, payrolls, and increased tax base. Therefore, local communities and service industries have a direct interest in providing adequate investment funds and assistance for recreation development, management, and maintenance.

Resource Base

The 1.7 billion acres of forest, rangeland, and associated water in the United States have the capability to meet the projected increase in demand for nearly all outdoor recreational experiences. However, the supply of lands to provide primitive and semiprimitive recreational experiences is rapidly declining in many areas. Statistically, 47 percent of the total forest and range land is in private ownership, and over 90 percent of the Federal acreage is in the western United States, including Alaska.

In total, these lands are rich in diversity of top graphy, vegetation, and climate. But there are shortages of some types of water-based recreation and highly specialized sites for activities such as downhill skiing.

Opportunities

There are numerous opportunities to provide for additional outdoor recreational experiences on all forest and range lands in all regions of the country. Major opportunities for meeting the diverse demands include:

Improved Development and Use of the Outdoor Recreation Resource

-- Rehabilitate deteriorating sites and maintain existing facilities.

-- Develop new sites in response to proven demand.

-- Develop facilities that improve access to National Forest System lands and private lands.

-- Increase recreation user fees to help pay the cost of providing services.

-- Further develop facilities such as trails, boat ramps, and parking to promote more even distribution of recreation use.

-- Encourage the private sector to develop commercial services such as resorts and campgrounds on private lands.

Improved Cooperative Efforts

-- Provide advice on development and operation of privately owned recreation facilities on or adjacent to National Forest lands.

-- Develop Federal facilities so that they complement rather than compete with opportunities provided by the private sector.

-- Provide tax and insurance information.

-- Emphasize joint planning so Federal, State, and local efforts are complementary.

-- Provide technical assistance to non-Federal landowners through State forestry organizations for developing nonincome-producing recreational opportunities.

Research Opportunities

-- Develop better methods of describing and measuring recreation benefits.

-- Evaluate participation trends.

-- Improve knowledge of resource capability and social and economic benefits.

-- Evaluate effects of land management planning decisions.

Alternative Goals and Implications

Alternative Goal 1

MANAGE NATIONAL FOREST SYSTEM LANDS TO PROVIDE RECREATIONAL ACTIVITIES AND EXPERIENCES EMPHASIZING THE FOREST SETTING AND ACCESSIBILITY FOR PEOPLE. PROVIDE ONLY THE SERVICES NECESSARY TO PROTECT OTHER RESOURCES AND PUBLIC HEALTH AND SAFETY NEEDS.

Basis for Alternative Goal 1

This goal is intended to emphasize protection of nonrecreational resource values and provide only those services and facilities necessary to meet public health and safety needs. Investments for maintenance of recreational facilities would be minimal resulting in further deterioration of existing facilities. Recreation support to other projects would be based on minimum funding to meet compliance levels in the short term. Direct costs to the Government would exceed anticipated returns since fees would not be charged at most sites because facilities would not meet minimum services required by law at fee sites. There would be continued significant deferring of capital investments.

Implications of Alternative Goal 1

1. Investments.--This goal requires minimal recreation investment and expenditures. The investment objective would be to protect nonrecreation resource values and productivity and adequately provide for the health and safety of National Forest users. As public use of the National Forests continues to increase, funding requirements for this goal will also increase; however, Forest Service facilities such as campgrounds, picnic areas, and trails, would deteriorate and not be replaced. Federal budgets would be reduced, with corresponding favorable impacts on the general taxpayer.

2. Outputs.--Recreation visitor use and participation on the National Forest is continuing to increase. The availability of recreation opportunities appears to be very important in determining future participation in recreation activities. Since this goal provides only minimal services to satisfy increasing public use, National Forest recreation outputs would increase at a lesser rate than goals 2 and 3. As National Forest recreation facilities are depreciated and closed, the free and low-cost opportunities for developed recreation would decline, offering the private sector additional opportunities to provide developed facilities and services. By 2000, recreation use or participation on National Forest System lands would increase to 270 to 290 million RVD's. The quality of these recreational experiences would be reduced to a level below that presently considered minimal, providing only those services necessary to user health and safety. National Forest settings would be maintained only to the level necessary to protect other resource values.

3. Community.--In terms of economic activity related to recreation use, this goal would provide the least benefit to those communities dependent on recreation expenditures. With reduced Federal recreation expenditures, there would be some increases in the investment level by the private sector.

4. Employment and income.--Achieving this goal would result in a significant decrease in public recreation employment related to National Forest recreation. This reduction could be offset somewhat by increased participation and employment in the private sector.

5. Private sector.--With a reduced Federal investment level, this goal could result in an increase in private sector recreation investments. The private sector may respond with investments in facilities and services not provided on National Forests. Federal policy would continue to limit private investments on National Forest lands.

6. Technology.--Goal 1 would limit the level and scope of recreation research. Research would focus on inventorying recreation opportunities and determining future recreation demands and preferences.

Alternative Goal 2

MANAGE NATIONAL FOREST SYSTEM LANDS TO PROVIDE RECREATIONAL ACTIVITIES AND EXPERIENCES EMPHASIZING THE FOREST SETTING AND ACCESSIBILITY FOR PEOPLE. PROVIDE SERVICES NECESSARY TO CONTINUE TO MEET THE NATIONAL FOREST SHARE OF THE DEMAND FOR FOREST AND RANGE-BASED OUTDOOR RECREATION.

Basis for Alternative Goal 2

This goal is intended to enhance the supply of National Forest recreation opportunities and meet the National Forest share of recreation demand on all lands. Increased costs for maintenance would be substantially offset by anticipated user fee receipts. Recreation use of the National Forests would increase at an average current rate for all uses. Costs would still exceed returns; however, additional receipts would be collected since a greater share of the facilities would meet service requirements. Fee levels would also increase, further enhancing returns from recreation investments and use.

Implications of Alternative Goal 2

1. Investments.--This goal requires moderate increases in recreation investments. In addition to protecting other resource values and maintaining productivity, this goal provides for managing the recreation resource for recreation values. To meet the National Forest share of demand, there would be increased expenditures for maintenance and construction of recreation facilities including roads, trails, campgrounds, and picnic areas. Increased funding would permit investments to reconstruct and correct unsatisfactory conditions of many recreation facilities. Only minimal new construction would occur.

2. Outputs.--Under this alternative goal, National Forests would maintain present standards and provide quality recreation experiences that a necessary to meet their share of the demand. Outputs of recreation use would be greater than goal 1, because of the improved quality and quantity of services provided. By year 2000, National Forest System lands would provide opportunities for 290 to 310 million RVD's. The private sector would be encouraged to develop and provide facilities and services on National Forest System lands.

3. Community.--Goal 2 would provide a greater volume of recreation opportunities, supplied by both public and private sectors. The economic condition of communities supporting recreation use would be enhanced. Increased receipts from user charges would result in increased payments to States. Since these payments represent significant proportions of some county government revenues, any increase in user collections would tend to improve community economic conditions.

4. Employment and income.--Under this goal, participation in recreation activities will increase and provide additional employment opportunities. Increasing user fees with concurrent increases in use would result in additional fee receipts.

5. Private sector.--This goal implies moderate participation by the private sector in the

delivery of recreation services on National Forest lands. Increases in outfitter guide services and in the development and operation of improved facilities would be expected.

6. Technology.--This goal requires a moderate increase in research expenditures. In addition to goal 1 efforts, there would be emphasis on social values of recreation, economic and social analyses of land use development patterns, and effects of energy costs on recreation participation.

Alternative Goal 3

MANAGE NATIONAL FOREST SYSTEM LANDS TO PROVIDE RECREATIONAL ACTIVITIES AND EXPERIENCES EMPHASIZING THE FOREST SETTING AND ACCESSIBILITY FOR PEOPLE. INCREASE THE CONTRIBUTION OF NATIONAL FORESTS TO MEET THE OVERALL PUBLIC NEED FOR FOREST AND RANGE-BASED OUTDOOR RECREATION, PARTICULARLY WHERE NATIONAL FOREST LANDS ARE BEST SUITED.

Basis for Alternative Goal 3

This goal is intended to increase the National Forest share of recreation opportunities, thereby facilitating increased recreation use on the National Forests. Because of the increased quality and quantity of recreation facilities, returns from user fees would increase; however, costs would still exceed receipts. Returns from user fees would increase more than increases in costs. This goal implies maximum participation from the private sector in the delivery of recreation services on National Forest System lands. As in Goal 2, user charges would continue to increase.

Implications of Alternative Goal 3

1. Investments.--This would require a significant increase in recreation investment to provide additional facilities to increase the supply of National Forest opportunities and to improve the condition of unsatisfactory facilities as well as to construct new facilities. In addition, the private sector would be encouraged, through various incentives, to participate in the development and delivery of recreation facilities and services on National Forest lands. Forest Service investments would generally be for opportunities where benefits were less than costs.

2. Outputs.--Under this alternative, recreation use would be greater than goal 2 because of the improved quality and increased quantity of services provided. National Forest System lands would provide opportunities for 400 to 420 million RVD's.

3. Community.--Goal 3 would provide increased recreation opportunities. The economic conditions of communities supplying recreation services would be enhanced. Rapid increase in use may disturb community stability in some local areas.

4. Employment and income.--Goal 3 expands employment opportunities and implies increased income and employment levels.

5. Private sector.--This goal would require significant involvement and participation by the private sector. The private sector would be encouraged to develop, operate, and maintain a

variety of recreation facilities and services on National Forest System lands. However, there may be some decline in private investment and use on private lands.

6. Technology.--Research efforts in goal 3 would be similar to those described in goal 2, although efforts would be accelerated.

Alternative Goal 4

MANAGE NATIONAL FOREST SYSTEM LANDS TO PROVIDE RECREATIONAL ACTIVITIES AND EXPERIENCES EMPHASIZING THE FOREST SETTING AND ACCESSIBILITY BY USING ECONOMIC OPPORTUNITIES TO MEET THE PUBLIC NEED FOR FOREST AND RANGE LAND-BASED OUTDOOR RECREATION.

Basis for Alternative Goal 4

This goal is intended to capture available opportunities for management and use of National Forest System lands for recreation opportunities only where anticipated benefits would exceed costs. User fees would be raised to provide a positive return on the direct operation and maintenance costs associated with recreation opportunities on National Forest System lands. Market pricing systems may result in a reduced level of recreation use on the National Forests.

Implications of Alternative Goal 4

1. Investments.--This goal requires moderate increases in recreation investments similar to goal 2. The significant difference is that recreation investments will be made only in those situations where direct returns will equal or exceed costs for operation and maintenance.

2. Outputs.--Under this alternative goal, the National Forests would maintain present standards and provide quality recreation experiences that are necessary to meet their share of the demand. Outputs would be similar to goal 2; however, market pricing principles would limit use. User fees would be increased significantly. In addition, fees would be levied for other activities for which fees are not now charged: wilderness use, camping in nondeveloped areas; and, through cooperative agreement with the States, hunting and fishing. Market pricing concepts could result in eliminating National Forest recreation opportunities for some elements of the public.

3. Community.--Goal 4 would provide about the same volume of recreational opportunities as goal 2. The economic condition of some communities would be enhanced through increased payments to States and reduced Federal budget impacts.

4. Employment and income.--Employment and income opportunities would be similar to goal 3. Some increase in Federal sector employment would be required to administer fee programs.

5. Private sector.--This is the same as goal 3. As Federal price levels begin to equal market levels, some additional private sector involvement could be expected.

6. Technology.--Similar to goal 2.

Comparison of Recreation Use Alternative Goals and Implications

	Goals			
	Goal 1	Goal 2	Goal 3	Goal 4
	Manage National Forest System lands to provide recreational activities and experiences emphasizing the Forest setting and accessibility for people. Provide services necessary to protect other resources and public health and safety needs.	Manage National Forest System lands to provide recreational activities and experiences emphasizing the Forest setting and accessibilitiy for people. Provide services necessary to continue to meet the National Forest share of the demand for forest and range-based outdoor recreation.	Manage National Forest System lands to provide recreational activities and experiences emphasizing the Forest setting and accessibility for people. Increase the contribution of National Forests to meet the overall public need for forest and range-based recreation, particularly where National Forest lands are best suited.	Manage National Forest System lands to provide recreational activities and experiences emphasizing the Forest setting and accessibility by using economic opportunities to meet the public need for forest and range land-based outdoor recreation.
	Implications			
Investments	Minimal investment necessary to protect non-recreation values, productivity, user health and safety	Moderate level to manage for recreation values and meet National Forest share of demand	Significant increase	Moderate increase
Outputs	Reduced quality 270-290 million RVD's	Maintain present standards and provide quality experiences 290-310 million RVD's	Increase opportunities 400-420 million RVD's	Approximately the same as goal 2
Community	Least support	Moderate	Greatest economic support possible. Some impact on community stability	Reduced budget impacts increase payments to States
Employment and income	Significant public sector decrease	Moderate increase	Greatest increase	Large increase
Private sector	Increased involvement	Moderate	Maximum involvement would be encouraged but may decline on private lands	Maximum participation

Implications (continued)

Economic efficiency	Costs greatly exceed returns	Costs slightly exceed returns	Costs moderately exceed returns	Returns to equal or exceed costs
Technology	Limited activities focusing on opportunity inventory and determining future demand and preference	Moderate activity expanding goal efforts into social values, land use, and effects of energy costs on recreation participation	Similar to goal 2 but some acceleration of effort	Similar to goal 2

Needs and Opportunities

The Demand and Supply Outlook

In Fiscal Year 1980, the National Forest Wildernesses received 8.4 million recreation visitor days 1/ of use or 3.6 percent of all National Forest System recreation visitor days. Reported uses more than doubled from 1965 to 1980. Only a small part of this increase is because of the addition of new wilderness. The 88 areas in existence in 1965 still accounted for 89 percent of total visitor days in 1980. Their use grew 83 percent over 15 years. Demand for recreation use of wilderness will grow each year for the next several decades. Although recreational activities are the most common uses of wilderness, other uses such as scientific study, mining, watershed, wildlife, and grazing, have important implications for assessing demand. While it is difficult to quantify demand for nonrecreational values of wilderness, demand for most of these uses is also likely to increase in the decades ahead.

Designated wildernesses are intended, by law, for recreational, scenic, scientific, educational, conservation, and historic use. Current use levels are close to the desirable upper limits for some wildernesses. Use must be kept at low-density levels if unmodified natural conditions are to be protected and opportunities for solitude are to be maintained. Carrying capacity will be reached in 30 percent of the National Forest wildernesses by 2000 regardless of investments.

1/ A visitor-day is any 12-hour aggregate of recreation use.

While overall use of wilderness has grown substantially, the land area available for wilderness designation has been reduced by development. The Nation has significant wilderness resources with the capability to meet projected demands for wilderness well into the 21st Century, if those lands administered by Federal agencies and considered suitable were added to the National Wilderness Preservation System and if other critical resource values do not preempt the wilderness values causing currently designated areas to be declassified.

Social, Economic, and Environmental Effects

The wilderness demand and supply situation has important implications. Wilderness designation has a primary effect on the level of commodity and noncommodity uses from the land. Where this balance is struck, it affects employment, quality of life, and other factors at local, regional, and national levels.

As remaining undeveloped lands are developed, the environment will inevitably be impacted in various ways. The opportunity to enjoy solitude and primitive recreation in an environment free of unmodified landscapes will be diminished. Air quality, water regimes, and fish and wildlife habitats will change from those found in unmodified conditions; the primeval character and influence will be lost in areas not designated as wilderness.

The occurrence and extent of other resources in wilderness, especially energy and mineral resources, is not well known. As the Nation seeks to reduce

its dependence on foreign supplies of critical resources, those areas now designated as wilderness will come under close scrutiny to determine whether they may be better suited for other public purposes.

The outlook also affects the economy in terms of national net benefit. Although few benefits from wilderness can be measured in dollars, there is still a need to evaluate the demand and supply relationship in economic terms. In general, conversion of undeveloped lands to developed ones will generate more direct income than could be expected by retaining the lands in an unmodified condition. Employment and cost returns to various levels of government will increase with development of other lands. Thus, although the benefits of additional designated wilderness are sometimes difficult to quantify, the costs in terms of foregone Federal, State, and local receipts and tax revenues and employment are more easily identified.

This outlook has some important social implications. Leisure opportunities relating to primitive and unconfined recreation will diminish as lands are developed. Communities and local economies depending on outdoor activities associated with wild lands may experience social changes as the lands undergo development. Social concern can be expected as long as the opportunity to expand or reduce the National Wilderness Preservation System is a viable option to consider. Scientific reference and study opportunities will also be reduced along with some loss of cultural and historic values.

Resource Base

The National Wilderness Preservation System consists of 257 areas totaling about 80 million acres. The Forest Service administers 158 units totaling 25 million acres. The National Park Service, Fish and Wildlife Service, and the Forest Service will have essentially achieved their total wilderness potential when action on the wilderness areas currently under consideration is completed. This leaves the Bureau of Land Management (BLM) as the major source of additional Federal lands with potential for wilderness classification. The BLM administers 24 million acres of roadless or undeveloped land judged suitable for consideration as wilderness. State and local governments also have opportunities to set aside land to be preserved in their natural state. Generally, these lands do not meet Federal standards for designation or management as wilderness.

Opportunities

There are a number of opportunities for increasing the size and capacity to absorb use of the National Wilderness Preservation System.

Area Adjustments

-- Complete the review of all suitable Federal lands and recommend to the Congress those units that warrant designation.

-- Consider the role of other public and private lands in the protection of the wilderness resource.

-- Restore primitive quality of lands by removal of incompatible uses and improvements.

-- Provide for development with planned future restoration as an alternative to wilderness designation.

-- Expand the National Wilderness Preservation System to include water wilderness in our oceans and lakes and underground wilderness in caves.

-- Remove from the National Wilderness Preservation System those areas in which wilderness values are less than other critically needed resource values.

Increase Capacity of Designated Wilderness

-- Improve management and protection to reduce impacts on the resource and improve the quantity and quality of wilderness experiences.

-- Provide wilderness visitors with information and training on "low-impact" camping and wilderness ethics so they will accept responsibility for maintaining wilderness values.

-- Conduct research to develop management systems that provide for sustained high levels of use, while maintaining the biophysical status of the wilderness environment.

Redefine Standards

-- Provide for variable wilderness standards based on visitor expectation.

-- Through legislation, redefine the wilderness standards to provide new concepts in wilderness values.

-- Divert nonwilderness uses such as competitive events and hang gliding away from designated wildernesses.

-- Develop alternative facilities and access for heavy impact activities outside wildernesses.

-- Inform visitors of alternative activities and development in nonwilderness areas.

Control Human Activities

-- Develop management techniques that will control visitor access to designated wildernesses.

-- Implement a wilderness fee for visitors.

-- Through carrying capacity determinations, limit wilderness visitors to ensure acceptable limits of human-caused change.

Alternative Goals and Implications

Alternative Goal 1

MANAGE NATIONAL FOREST WILDERNESS FOR PUBLIC USE AND ENJOYMENT SO THAT THE WILDERNESS CHARACTER IS PROTECTED, NATURAL CONDITIONS PRESERVED, AND THE PUBLIC PURPOSES OF WILDERNESS ACHIEVED. PROPOSE SELECTED ADDITIONS TO THE NATIONAL WILDERNESS PRESERVATION SYSTEM.

Basis for Alternative Goal 1

This goal responds to the mandate of the Wilderness Act of 1964 to protect and perpetuate wilderness values. To accomplish the wilderness management program and prevent degradation of the wilderness character of designated areas, more intensive management techniques will need to be implemented. Human-caused impacts on what is supposed to be an unmodified environment will need correction in numerous areas. This goal envisions action by Congress to add to the National Wilderness Preservation System those suitable areas of National Forest System lands recommended by the Administration.

Implications of Alternative Goal 1

1. Investments.--This goal would require increased funding over current levels. A 15--20-percent expansion of National Forest System wilderness management programs and research efforts would be needed to retain the wilderness character of designated units. Restoration of areas within wilderness that have lost their primeval character or unmodified condition is the most significant cost factor along with costs associated with bringing new areas added to the National Wilderness Preservation System up to standard.

2. Outputs.--Over the long term, the outputs related to wilderness purposes will increase under this goal as compared to either goals 2 or 3. Goal 1 will increase the quantity of outputs, in part, by adding areas to the System on which demands can be met. Recreation visitor days use within wildernesses by 1990 will be 14 million, an increase of 50 percent from current levels.

3. Nonrenewable resources.--Goal 1 has the greatest potential to adversely effect utilization of energy and mineral resources because of the amount of land already in the System or proposed for addition and the restraints prescribed by law on removing these resources.

4. Renewable resources.--This goal retains renewable resources in a natural condition to a greater extent than other goals because of the proposed additions to the System. It allows renewable resource utilization for commodity purposes to a lesser extent than the other goals.

5. Community.--Economic stability, lifestyle, and other community conditions will be only slightly altered for designated wildernesses by any of the three goals. This goal tends to restrict, more so than the others, the opportunity to realize benefits from nonwilderness outputs.

6. Employment and income.--This goal will result in less potential income and employment to those industries utilizing the commodity resources of the National Forests. Outfitter and guide businesses and the recreation support industry could expect some added increase in income because of new areas added to the System. There will be a slight increase in recreation service industry employment because of intensified management and increased acreage under management.

7. Legislative consideration.--This goal requires action by Congress to enact into law the suitable areas for addition to the National Wilderness Preservation System proposed by the Administration.

8. Technology.--Research will be undertaken to define wilderness character; develop social carrying capacity criteria; devise strategies relating to occurrences such as fire, insects, and disease; measure the impacts of various visitor types; and study the effects of acid rain on wilderness quality.

Alternative Goal 2

MANAGE NATIONAL FOREST WILDERNESS FOR PUBLIC USE AND ENJOYMENT SO THAT THE WILDERNESS CHARACTER IS PROTECTED, NATURAL CONDITIONS PRESERVED, AND THE PUBLIC PURPOSES OF WILDERNESS ACHIEVED. MAINTAIN THE CURRENT ACRES OF NATIONAL FOREST SYSTEM LANDS IN THE NATIONAL WILDERNESS PRESERVATION SYSTEM WITH PROPOSALS FOR MINOR ADDITIONS AND DELETIONS WHERE NEEDED FOR PUBLIC PURPOSES.

Basis for Alternative Goal 2

This goal is equally as responsive as goal 1 to the Wilderness Act of 1964, but the intensity of applied wilderness management is lower. Fewer designated wilderness acres are anticipated with congressional action making only minor additions and deletions to the National Wilderness Preservation System as recommended by the Administration. Fewer wilderness visitors than goal 1 are anticipated since the System does not increase in size. Human impacts on the unmodified character of the wilderness will be treated with less intensity than goal 1.

Implications of Alternative Goal 2

1. Investments.--This goal would require increased funding over current levels, but a slightly lower management level than goal 1. A 10--15-percent expansion of National Forest System wilderness management programs and research efforts would be needed to meet this objective. Restoration of areas within wilderness that have lost their primeval character and provisions for wilderness use opportunities will be the most significant cost factors.

2. Outputs.--Implementation of goal 2 will result in little change in the total size of the National Wilderness Preservation System on National Forests. It will produce an increase in wilderness outputs by using the current unmet capacity of the System and more intense management.

Recreation visitor days use within wildernesses by 1990 will be 12 million, an increase of 25 percent from current levels.

3. Nonrenewable resources.--Goal 2 continues the current trend in utilizing energy and mineral resources. Because of the costs associated with protecting the wilderness character and public attitudes toward mining or leasing in wilderness, utilization of nonrenewable mineral resources will be both expensive and slow to develop.

4. Renewable resources.--This goal retains natural conditions for renewable resources on about the same number of acres as the present National Forest System wilderness. It also maintains the current levels of commodity use of renewable resources in wildernesses.

5. Community.--Goal 2 will be viewed as a continuation of the current National Wilderness Preservation System. Economic stability, lifestyle, and other community conditions are not significantly affected from current patterns.

6. Employment and income.--This goal should have no impact on the income of those industries servicing wilderness use. Commodity outputs would be slightly higher than under goal 1, with a corresponding increase in income and employment relating to those industries.

7. Legislative consideration.--This goal requires no action by Congress except for minor additions and deletions to the National Wilderness Preservation System from time to time as proposed by the Administration.

8. Technology.--In addition to activities listed for alternative goal 1, there would be a moderate increase in research to evaluate techniques for improving below-standard conditions, to develop biophysical carrying capacity criteria, to develop monitoring techniques, and to devise procedures for anticipating potential conflicts.

Alternative Goal 3

MANAGE NATIONAL FOREST WILDERNESS FOR PUBLIC USE AND ENJOYMENT SO THAT THE WILDERNESS CHARACTER IS PROTECTED, NATURAL CONDITIONS PRESERVED, AND THE PUBLIC PURPOSES OF WILDERNESS ACHIEVED. PROPOSE A REDUCTION OF THE ACRES OF NATIONAL FOREST SYSTEM LANDS IN THE NATIONAL WILDERNESS PRESERVATION SYSTEM WHEN PORTIONS ARE FOUND BETTER SUITED FOR OTHER PUBLIC PURPOSES.

Basis for Alternative Goal 3

This goal would recognize an intensive wilderness management program being applied to a smaller System than in goals 1 and 2. Where energy, mineral, or other public values warrant, the Administration would propose declassification of currently designated wilderness. As in goal 1, greater management efforts would be implemented to retain the wilderness character of designated areas, while providing for visitor use and enjoyment opportunities.

Implications of Alternative Goal 3

1. Investments.--This goal would require increased funding over current levels. Although units of the National Wilderness Preservation System within the National Forests would be reduced, an expansion of wilderness use opportunities, while maintaining a satisfactory biophysical environment, will require intense application of wilderness management techniques. This will increase expenditures for wilderness management.

2. Outputs.--Goal 3, over the short term, will produce an increase in uses related to wilderness by using the current unmet capacity of the System and more intense management. Over the very long term,

uses will be less than goals 1 and 2 because of the fewer designated areas and acres.

Recreation visitor-days use within wildernesses by 1990 will be 12 million, an increase of 25 percent from current levels.

3. Nonrenewable resources.--The opportunity to utilize energy and mineral resources is increased under this goal. Acres currently designated would be proposed for declassification where mineral and energy values warrant.

4. Renewable resources.--This goal reduces the acres of natural conditions for renewable resources reserved by wilderness classification as compared to goals 1 and 2. It permits increased renewable resource utilization for commodity purposes where commodity values are high relative to wilderness values.

5. Community.--Economic stability, lifestyle, and other community conditions will be altered to a greater extent by this goal than either of the other two. This goal expands, more so than the others, the opportunity to realize benefits from nonwilderness outputs.

6. Employment and income.--This goal should result in increased income to those industries utilizing commodity resources of the National Forests. Recreation service industries would probably have a slight reduction. However, the amount would be insignificant in relation to industry totals. Recreation-based employment may be slightly reduced. Employment in the commodity resource areas may increase in specific locations.

7. Legislative consideration.--This goal requires action by Congress to remove from the National Wilderness Preservation System those areas proposed by the Administration as better suited for other public purposes.

8. Technology.--This would require some additional research on techniques for identifying areas impacted by heavy use and on monitoring methods and threshold points for nondegradation of wilderness values. Research would also be conducted to determine social effects of limited use and to encourage use in less impacted areas.

Comparison of Wilderness Use Alternative Goals and Implications

	Goals		
	Goal 1	Goal 2	Goal 3
	Manage National Forest wilderness for public use and enjoyment so that the wilderness character is protected, natural conditions preserved, and the public purposes of wilderness achieved. Propose selected additions to the National Wilderness Preservation System.	Manage National Forest wilderness for public use and enjoyment so that the wilderness character is protected, natural conditions preserved, and the public purposes of wilderness achieved. Maintain the current acres of National Forest System lands in the National Wilderness Preservation System with proposals for minor additions and deletions where needed for public purposes.	Manage National Forest wilderness for public use and enjoyment so that the wilderness character is protected, natural conditions preserved, and the public purposes of wilderness achieved. Propose a reduction of the acres of National Forest System lands in the National Wilderness Preservation System when portions are found better suited for other public purposes.
	Implications		
Public use	Manage for public use and emjoyment	Manage for public use and enjoyment	Manage for public use and enjoyment
Investment	Requires 15-20 percent expansion of NFS wilderness programs and Research	Requires 10-15 percent expansion of NFS wilderness programs and Research	Requires 15-20 percent expansion of NFS wilderness programs and Research
Outputs	Wilderness RVD's will total 14 million by 1990	Wilderness RVD's will total 12 million by 1990	Wilderness RVD's will total 12 million by 1990
Nonrenewable resources	Greatest impact on nonrenewable resource	No change from present on nonrenewable resource	Least impact on nonrenewable resource
Renewable resources	Natural environment least impacted Most restrictive on renewable resource utilization	Natural environment moderately impacted No change from present on renewable resource utilization	Natural environment most impacted Least restrictive on renewable resource utilization
Employment and income	Minor impact on employment and economic stability	Minor impact on employment and economic stability	Minor impact on employment and economic stability
Legislative	Congressional action required	Congressional action required	Congressional action required
Technology	Moderate research effort to aid wilderness managers	Increased research effort above goal 1	Moderate research effort

Needs and Opportunities

The Demand and Supply Outlook

The Nation's expanding population is increasing its demands for commercial and recreational uses of wildlife and fish. The most significant increases are occurring in the Sunbelt and western States where population growth is most rapid. Given the opportunity for users to participate at an acceptable cost, within a decade there may be a 30-percent increase in wildlife observation with other representative uses changing in corresponding fashion:

(% increase above 1980)

Use	1990	2000	2030
Freshwater angling	18	39	90
Waterfowl hunting	19	33	69
Big game hunting	14	25	48

Currently, approximately 180 vertebrate species in the United States are on the Federal list as actually or potentially in danger of extinction. Unless specific management strategies are implemented, the list will increase during the next 20-year period. The U.S. Environmental Protection Agency (EPA) reports that up to 2 million acres of fish and wildlife habitat will be lost annually between now and the year 2000. The implications for wildlife are serious: nearly half of the acreage of wetlands that once existed in the lower 48 States is gone, and 20 million of the 25 million acres of hardwood bottomland along the lower Mississippi have been seriously impacted. This places a heavier responsibility on public lands that retain wildland qualities. Species such as salmon, steelhead, waterfowl, and those dependent upon mature timber, wetlands, and riparian areas will continue to decline nationally as their special habitats become less available.

For example, the importance of privately owned habitat is illustrated in the 13-State northeastern region. In 1975, a total of 67 percent of that region's wildlife and fish-oriented recreation occurred on private lands. Over 70 percent of the small game and over 50 percent of the big game hunting also occurred on those lands.

Social, Economic, and Environmental Effects

Decline in existing habitat conditions has implications, both in respect to losses that would be suffered by wildlife and fish users and in respect to losses of the Nation's wild heritage.

The most serious measurable economic losses involve the half-billion dollar per year salmon processing industry in the Pacific Northwest and Alaska. Current demand expectations indicate that economic, cultural, and social demands for these fish will not be fully met. Legal and social confrontations and international fishing rights disputes will result. Salmon sport fishing will become a less satisfying recreational experience because of competing demands for these fish, even though anglers are willing to pay higher prices for such fishing.

In nearly every State, recreational tourism constitutes one of the top three industries. It offers stability to countless communities. As the quantity and quality of wildlife and fish habitat decline, rural communities dependent on consumptive and nonconsumptive recreation expenditures for a major share of their economic activity and employment will be adversely affected. However, to the extent that other uses of the land provide new community benefits, this impact may be offset. Finally, as costs increase, high-quality recreation on nonpublic lands could soon be available only to the affluent. The price of hunting and fishing on private lands already exceeds the price many Americans are willing to pay.

Resource Base

Currently, all 1.7 billion acres of forest and range land and water resources within the United States, including the 190 million acres that make up the National Forest System, provide some form of wildlife habitat. The water resource on the National Forest System land base includes 128,000 miles of streams and 2,209,000 acres of lakes and reservoirs.

Opportunities vary for production of fish and wildlife from these lands and waters. Most lands are below their productive capability and can be improved. By applying habitat management and protection techniques, these lands can provide additional products and uses necessary to help meet the Nation's growing demands.

Opportunities

There are significant opportunities to increase wildlife and fish populations on National Forest System and State and private lands. Progressive programs could maintain or increase supply to meet demands over the next 20-year period.

Some specific actions are:

-- Increase fish and wildlife coordination with management of other resources, especially range and timber management, to increase productive habitat for fish and wildlife.

-- Increase the number of direct habitat improvement projects.

-- Increase the productivity of the best habitats for species in high demand by the public.

-- Acquire selected private lands within National Forest boundaries (especially wetlands and riparian habitat) to maintain habitat productivity and increase recreational opportunities.

-- Introduce desired species to suitable unoccupied habitats.

-- Reintroduce species that have been displaced.

-- Through habitat management, remove species from the threatened or endangered species lists and prevent additional sensitive species from being listed.

-- Control public use and access to sensitive habitats during specific times of the year such as reproductive periods and winter seasons.

-- Determine ways to graze livestock and wildlife without undue competition or damage to riparian aquatic ecosystems.

-- Emphasize wildlife and fish concerns in National Forest and State Forest Resource plans.

-- Increase coordination with States and other public agencies involved in fish and wildlife management.

-- Improve planning by involving fish and wildlife biologists.

-- Increase technical and financial assistance to private landowners through State and Private Forestry programs.

-- Encourage State and private organizations to invest in habitat management programs on NFS lands.

-- Conduct needed wildlife and fish habitat surveys, compile biological data, and develop techniques to integrate wildlife and fish objectives into other resource programs.

-- Provide assistance to States in managing wildlife populations, controlling harvests, and getting increased public benefits from wildlife populations on National Forests.

Alternative Goals and Implications

Alternative Goal 1

MAINTAIN AND IMPROVE WILDLIFE AND FISH HABITAT PRODUCTIVITY WITH PRIMARY EMPHASIS ON SELECTED SPECIES AND THREATENED AND ENDANGERED SPECIES IDENTIFIED IN STATE AND NATIONAL FOREST PLANNING PROCESSES.

Basis for Alternative Goal 1

This goal responds to the National Forest Management Act by providing management to maintain viable populations of all existing native vertebrate species on National Forest lands, while maintaining and improving habitats for species selected for emphasis in National Forest planning. It also relates to wildlife and fish direction in the habitat productivity goals established in National Forest plans. The habitat productivity goals are comparable with the goals established in the 1980 RPA Program. This goal includes moderate Federal investments in habitat improvement projects designed primarily for wildlife and fish. Increases in habitat productivity would largely be through coordination or integration with other resource programs. Only programs where direct benefits exceed costs would be undertaken. Activities will be consistent with program proposals in State Comprehensive Wildlife and Fish plans.

Implications of Alternative Goal 1

1. Investments.--This goal requires a moderate increase over the 1980 base year level in the

wildlife and fish investments oriented primarily to management of species selected for emphasis in State and National Forest plans. The level of wildlife and fisheries support to other resource uses would be significantly increased. There would also be increased expenditures for Research, State and Private Forestry cooperative programs, and direct habitat improvement programs for the selected species.

2. Outputs.--Under this alternative goal, there would be a 25-percent increase in habitat productivity for selected species of fish and wildlife by 2000 and a 70-percent increase by 2030, which closely corresponds to the 1980 RPA wildlife and fish goal. Species selected would be those that were the focus of considerable local, statewide, or regional public issues; internal management concerns; or unique resource opportunities. In general, this will result in greater emphasis on game species. Recovery needs for threatened and endangered species will be 50 percent complete by 2000 and 100 percent complete by 2030. Sensitive species, in which population viability is a concern, would be managed so they never require listing and protection under the Endangered Species Act. By 1990, monitoring will be fully implemented to determine habitat capability levels for the selected species.

Wildlife and fish expertise necessary for resource coordination will be available for all Forest Service programs. The increasing demand for fish and wildlife-related recreation, coupled with the increase in availability, will result in a significant increase in this use on the National Forests. Wildlife and fish-related recreation use will increase proportionally to the increase in habitat productivity and public demand for this use.

3. Nonrenewable resources.--This goal will have little impact on the short- and long-term outputs of nonrenewable resources, primarily energy resources. The increased level of wildlife and fish expertise available would provide for the coexistence of nonrenewable resource programs with a minimum of conflict. Most energy-related activities are site intensive; therefore, seasonal or permanent coordination will provide for wildlife and fish protection, while also providing for energy development. Access for energy development will require careful management to meet the wildlife and fish needs under this goal.

4. Renewable resources.--Implementation of this goal will significantly improve and increase wild life and fish coordination with other renewable resource programs. A significant share of meeting wildlife and fish habitat productivity needs is through coordination with other resources, primarily range and timber. While timber and livestock outputs may be less than financially optimal under this goal, total resource outputs will probably increase as a result of better program balance.

Timber coordination will be designed to provide the proper ratio of cover and forage, access management, and diversity of tree-age classes and species necessary to meet habitat productivity needs. Range coordination will emphasize management to maintain healthy riparian ecosystems, productive big game

winter ranges, and protection of other key fish and wildlife habitats.

5. Community.--Recreational and commercial use of fish and wildlife will increase. This will contribute significantly to the economy and stability of many local communities that have a high dependency on the consumptive and nonconsumptive uses of fish and wildlife. Habitat for anadromous fish will be improved. This will enhance the commercial fishing industry and increase Native American utilization of this resource. Greater emphasis on providing wildlife and fish expertise through State and Private Forestry programs will improve habitat productivity on State and private lands, primarily in the East.

6. Employment and income.--Increased investments for wildlife and fish oriented recreation will provide additional employment related to tourism, guiding and outfitting, commercial fishing, and other related services.

7. Technology.--This goal provides technology to maintain or improve the productivity of wildlife and fish habitat with primary emphasis on selected species and threatened and endangered species. Techniques would be developed to maintain, improve, and monitor habitat productivity as would methods to evaluate land use impacts on wildlife and fish.

8. Economic efficiency.--Under this goal, the wildlife and fish program will be evaluated on economic efficiency criteria to ensure that benefits exceed costs and proper levels of demand are met. Programs for threatened and endangered species will be evaluated to ensure that the least costly programs that accomplish protection and recovery needs are selected. Federal expenditures will increase immediately because of increased threatened and endangered species management, but Federal expenditures should decline as management activities result in fewer species requiring the protection of "designation as protected" species.

Alternative Goal 2

MAINTAIN AND IMPROVE WILDLIFE AND FISH HABITAT PRODUCTIVITY WITH PRIMARY EMPHASIS ON SPECIES DIVERSITY, TRADITIONAL DISTRIBUTION PATTERNS, AND THREATENED AND ENDANGERED SPECIES.

Basis for Alternative Goal 2

This goal emphasizes habitat management to promote a continuation of diverse, highly dispered habitats for a wide variety of fish and wildlife species, while also emphasizing certain selected species. The basis for this goal is in the U.S. Department of Agriculture wildlife and fish policy, which states "...the National Forests and Grasslands will be managed to provide and maintain diversity of plant and animal communities." This goal also corresponds with direction resulting from the National Forest Management Act and places more emphasis on the needs of nongame fish and wildlife relative to goal 1. This is responsive to increasing public interest in nongame as reflected in passage of the Nongame Act in 1980. Attainment of the habitat productivity goals would be through a balanced program of habitat improvements designed primarily for fish and wildlife and through coordination with other resource programs. Activities would be consistent

with program proposals in State Comprehensive Wildlife and Fish plans.

Implications of Alternative Goal 2

1. Investments.--This goal requires slightly greater investments in wildlife and fish over the 1980 base year level than in goal 1. Support to other resources would be significantly increased. There would also be increased expenditures for direct habitat improvements designed primarily to maintain or to enhance species variety. This represents a strategy to create highly diverse habitat dispersed throughout the National Forests to provide productive habitat for all species with emphasis on certain selected species reflecting public wants and needs. There would also be increased expenditures for Forest Service Research, as well as State and Private Forestry cooperative programs, primarily to provide habitats that maximize species diversity and emphasize threatened and endangered species and selected species.

2. Outputs.--Under this alternative goal, there would be a 20-percent increase in habitat productivity for selected species by 2000 and an 80-percent increase by 2030. Species selected for emphasis under this goal would represent a wide array including game, furbearers, nongame, and waterfowl. Management emphasis on a variety of species would result in a more uniform degree of habitat diversity over all NFS lands. Recovery needs for threatened and endangered species will be 50 percent complete by 2000 and 100 percent complete by 2030. Populations of sensitive species would be maintained above viable levels, so they would not require protection under the Endangered Species Act. There would be a significant increase in nonconsumptive and consumptive wildlife and fish-oriented recreation.

3. Nonrenewable resources.--The implications of this goal would be similar to those of goal 1. The increased level of wildlife and fish coordination and comprehensive practices should minimize conflicts of this goal with energy related resources.

4. Renewable resources.--There will be significant increase in wildlife and fish coordination with other resources, especially timber management. Such coordination will achieve a major portion of this goal. A high level of diversity and dispersal of tree-age classes and species would be maintained. This could result in the maintenace of old-growth timber beyond that which is necessary to maintain viable populations of old-growth dependent species and, therefore, would have an impact on potential timber yields. Timber coordination will be designed primarily to provide a diversity of tree-age classes and species and proper interspersion of cover and food. Range coordination will emphasize maintenance of healthy riparian ecosystems and the protection of other key fish and wildlife habitats.

5. Community.--This goal places emphasis on species diversity and, therefore, contributes most to communities where nonconsumptive wildlife and fish opportunities are greatest. However, consumptive uses of fish and wildlife would also increase.

6. Employment and income.--Opportunities for wildlife and fish-oriented recreation will increase

and provide additional employment related to tourism, guiding and outfitting, commercial fishing, and other related services.

7. Technology.--This goal provides technology to maintain and improve the productivity of wildlife and fish habitats with primary emphasis on species diversity and dispersal of habitat for selected species. It develops methods to increase habitat productivity and species diversity and to reduce or mitigate factors that alter or reduce current species distribution.

8. Economic efficiency.--Under this alternative goal, evaluation would be similar to goal 1. It would be expected that program costs would be higher than goal 1 because of increased programs in habitat improvement for a wider variety of species.

Alternative Goal 3

INCREASE WILDLIFE AND FISH HABITAT PRODUCTIVITY TO RESPOND TO PUBLIC PREFERENCES AS SUPPORTED BY STATE PLANS AND PROGRAMS AND PROVIDE FOR THREATENED AND ENDANGERED SPECIES.

Basis for Alternative Goal 3

The basis of this goal is primarily the State comprehensive plans developed between State Fish and Wildlife agencies and the Forest Service, as required by the Sikes Act (P.L. 93-452). These plans include habitat productivity goals for wildlife and fish necessary to meet anticipated public wants and needs. This goal is responsive to many of the public comments in the 1980 RPA and the 1981 General Accounting Office recommendation that the Forest Service should give greater emphasis to conserving and managing wildlife and fish. This goal provides for the largest increases in habitat productivity with emphasis on species in public demand. Attainment of this goal would be through intensive coordination with other resources and a significant increase in projects designed primarily for wildlife and fish. Only programs where direct benefits exceed costs would be undertaken.

Implications of Alternative Goal 3

1. Investments.--This would require the largest increase in wildlife and fish investments primarily oriented to full implementation of habitat capability goals reflecting public desires. State Comprehensive Wildlife and Fish plans, which reflect public preferences for population levels of various wildlife and fish species, would be the basis for the wildlife and fish habitat program. These plans are developed cooperatively with the States and the Forest Service and reflect the results of public input from the States. They provide for cost-sharing of wildlife and fish programs amongst the States and Federal agencies. Emphasis would be on direct habitat improvement as well as coordination with other resources. There would be increased expenditures for Forest Service Research, State and Private Forestry cooperative programs, and State programs to realize full opportunities to increase the production of wildlife and fish.

2. Outputs.--Habitat management programs to increase wildlife and fish populations to levels

indicated in the State Comprehensive Wildlife and Fish plans would be fully implemented by 1990. There would be a 50-percent increase in productive habitat for species in public demand (such as anadromous fish, elk, mule deer, whitetail deer, and turkey) by 2000. The habitat conditions to support the wildlife and fish species and populations stated in the State Comprehensive Wildlife and Fish plans would be fully provided by 2030. Coordination with other resources would be emphasized; 100 percent of the wildlife and fish support necessary for resource coordination would be provided by 1990. Recovery needs for threatened and endangered species would be fully met by 2030. All efforts required for management of sensitive species would be undertaken to prevent their listing as threatened and endangered species. The increase in habitat productivity for species in high demand will significantly increase wildlife and fish use on National Forest System lands.

3. Nonrenewable resources.--This goal could have some impact on the short- and long-term outputs of energy-related resources; however, potential impacts can be offset by increased levels of coordination. Improved access and wildlife disturbance related to energy development would be a major concern; however, those impacts could be mitigated by seasonal restrictions or road closures.

4. Renewable resources.--Attainment of this goal requires considerable coordination with other resources, especially timber and range. Timber management practices will have to be designed to provide desirable interspersion of cover-forage ratios, treeage classes and species diversity, and proper management of public access. This goal will require livestock management programs that promote healthy riparian ecosystems, ample forage on big game winter ranges and protection of other key fish and wildlife habitats. Under this goal, timber and livestock outputs may be less than the potential; however, it would probably yield greater total resource outputs as a result of a more balanced program.

5. Community.--Recreational and commercial use of fish and wildlife would increase. This will contribute significantly to the economy and stability of many local communities that have a high dependency on the fish and wildlife resource, especially for consumptive purposes. Habitat capability for anadromous fish would be improved and significantly contribute to the commercial fish industry and Native American utilization. Emphasis on providing additional wildlife and fish expertise through State and Private Forestry cooperative programs will improve habitat productivity on State and private lands. This alternative goal would also provide for close relations with State fish and game departments since comprehensive plans developed jointly with the States would provide the basis for public preferences for species and population goals.

6. Employment and income.--This goal would generate a significant increase in wildlife and fish-oriented recreation. Associated employment and income would also increase. Increasing habitat capability for species in demand will contribute to employment opportunities for tourism, guiding and outfitting, commercial fishing and other related services.

7. Technology.--This alternative goal develops technology to provide wildlife and fish habitats for species in public demand.

8. Economic efficiency.--Under this alternative goal, evaluation would be similar to Goals 1 and 2. The emphasis would be on producing to satisfy State levels levels of demand, providing benefits exceed costs. This is the highest cost program. Joint planning, financing, and implementation is shared by Federal and State agencies.

Comparison of Wildlife and Fish Habitat Alternative Goals and Implications

	Goals		
	Goal 1	Goal 2	Goal 3
	Maintain and improve wildlife and fish habitat productivity with primary emphasis on selected species and threatened and endangered species identified in State and National Forest planning processes.	Maintain and improve wildlife and fish habitat productivity with primary emphasis on species diversity, traditional distribution patterns, and threatened and endangered species.	Increase wildlife and fish habitat productivity to respond to public preferences as supported by State plans and programs, and provide for threatened and endangered species.
	Implications		
Investments	Moderate increases oriented toward selected species	Increases oriented toward species diversity (slightly greater than goal 1)	Significant increases oriented toward species preferred by public
Outputs	Improve habitat productivity for selected species by 70 percent by 2030	Increase species diversity, while improving the habitat productivity for selected species by 80 percent by 2030	Fully meet habitat capability levels for species preferred by the public by 2030
	Manage National Forest habitats in cooperation with States		Habitat management programs will closely correspond to State population goals
	Maintain viable populations of all species. Improvement for selected species	Maintain and improve habitats for traditional species mixes and distribution	Improve and expand habitat management and species populations that reflect public preferences
	Maintain and improve existing endangered, threatened, and sensitive species habitats. Assure no new species become threatened and endangered		
	Emphasize Sikes Act programs for selected species	Emphasize Sikes Act projects for species diversity	Fully utilize Sikes Act plans to determine public preferences for species and populations
	Provide increased levels of technical assistance to private forest landowners in cooperation with State Fish and Wildlife agencies. Emphasize timber/range/minerals coordination by providing demonstration areas on National Forest lands		
Nonrenewable resource	Minimize impacts on energy developments because of a high degree of coordination		
Renewable resource	Coordinate, protect, and improve wildlife and fish habitat through coordination with other activities for selected species	Coordinate wildlife/fisheries habitat needs with other resource activities to optimize habitat conditions which promote species diversity	Emphasize opportunities to enhance wildlife and fish habitat through coordination with other resource activities to meet habitat productivity goals desired by the public

Implications (con't)

	Goal 1	Goal 2	Goal 3
Technology	Provide research to meet habitat management needs for viable population levels of all species, but emphasize selected species	Provide research to meet habitat management needs for viable populations of all species, but emphasize species diversity	Provide research to meet management needs for viable populations of all species, particularly species habitat and populations that best respond to public preferences
Community	Contributes to communities dependent on wildlife		Contributes most to wildlife-dependent communities
Employment and income	Contributes to tourism-based employment and consumptive utilization of the fish and wildlife resource		Contributes most to tourism-based employment and consumptive utilization
Economic efficiency	Direct program benefits would exceed costs	Direct program benefits would exceed costs	Direct program benefits would exceed costs

Needs and Opportunities

The Demand and Supply Outlook

This opportunity area addresses nonrenewable mineral and energy resources such as oil, gas, and coal. Renewable energy resources are discussed in their appropriate section: biomass in Range Productivity and Timber Supply, and hydropower in Water Yield and Quality.

Mineral and energy resources are basic raw materials of United States industry. They are important to the Nation's economy, security, and standard of living. Supplies of some important minerals and energy materials are increasingly difficult to obtain. A large share of our supplies of energy and strategic minerals is produced in other countries, and import dependency is increasing. Availability depends on the international political climate and world trade situation.

Despite the lack of reserves for a number of minerals, the Nation's resource base is generally extensive. Considerable untapped mineral and energy resources underlie National Forest System (NFS) lands. In many instances, these resources are in remote areas where development has been impeded by land status, difficult terrain, and climatic conditions. Today, growing demands and higher mineral and energy prices make mining in remote areas more attractive.

The Forest Service can help ease our expanding dependence on foreign mineral supplies by promoting and facilitating mineral and energy development on the 190-million-acre National Forest System. The Forest Service also has management responsibility for the minerals and, in some cases, the surface resources on about 10,000 acres of lands that are outside the NFS boundary. These are lands where the mineral rights are federally owned and the Forest Service, as the adjacent land management agency, has administrative responsibility.

Substitution efforts for critical minerals are beneficial, but because of the long lead time for development of acceptable substitutes, they yield limited near-term benefits.

Conservation, through reduced use, is difficult to achieve and takes considerable time. Demand for mineral commodities is not very responsive to price changes. Also, because mineral processing and related technologies are capital intensive, it takes relatively long periods of high prices to prompt the development and application of new, conservation-oriented technologies. New technology and recycling efforts can ease dependence on imports and possibly reduce certain environmental impacts.

Social, Economic, and Environmental Effects

The United States economy, security, and standard of living are sensitive to the availability and price of mineral and energy materials. Consumers pay higher prices when minerals and energy must be imported and often at prices set by groups controlling the international market. Our industrial production and national security depend on imports of certain minerals and would be seriously impaired if supplies were cut off for as few as 3 months.

However, industry has increased prospecting, exploration, and development efforts for energy and critical minerals on NFS lands, despite the high costs and risks of these ventures. New and expanded energy and mineral developments will have noticeable social and environmental effects. New operations will increase local tax bases and employment opportunities. However, local facilities and services, including housing, schools, utilities, roads and social services may be unable to meet the growing demands of an expanding population. Existing rural populations will experience social and economic changes and some alteration of their physical environment. Although mining is not generally land extensive, local facilities and services and reclamation needs must be carefully planned and then monitored as development proceeds.

Mineral exploration and development within certain designated areas (for example, wilderness, wilderness study areas, wild and scenic rivers, and national recreation areas) are sensitive social and environmental issues. Favorable and adverse impacts must be identified and carefully evaluated to determine the effects on all environmental systems. From these determinations, acceptable alternatives will be selected.

The Forest Service, the management agency for mineral resources on NFS lands, facilitates the development of mineral resources by responding to requests for approval of lease applications for leasable minerals (oil, gas, coal, phosphate, and others); operating plans for all minerals; and related special-use permits for roads, rights-of-way, and similar uses of NFS lands. The Forest Service manages the development of locatable minerals pursuant to the Mining Law of 1872, as amended; requires operators to adhere to Forest Service approved operating plans; and promotes the use of common variety minerals (sand, gravel, and stone) from NFS lands through negotiated and advertised competitive sales. The Forest Service ensures reclamation of disturbed areas, through stipulations and administration of mineral development on NFS lands, to serve other resource needs in the future. Prudent administration of mineral development on NFS lands requires Forest Service readiness to respond to leasing, permitting, and other needs.

Predicted increases in minerals production from private lands present an increased need for reclamation of disturbed lands. The Forest Service provides technical assistance, through State forestry or natural resource organizations, in the reclamation of private surface-mined areas through revegetation and reforestation.

Resource Base

Although some domestic mineral resources are limited, there are geologic indications that others occur in abundance. The United States may have the resources to supply an increasing amount of its overall energy and mineral needs for many years. The Forest Service plays a key role in promoting and facilitating industrial exploration and development of these resources on NFS lands.

NFS lands and other lands managed by the Forest Service are believed to contain considerable mineral resources. Fifty billion tons of coal underlie approximately 6.5 million acres. This coal resource could sustain our domestic needs for over 70 years based on 1980 domestic coal consumption levels. About 45 million acres, particularly in the Western and Eastern Overthrust Belts, have potential for oil and gas. Some 300,000 acres have oil shale potential. Idaho has significant cobalt mineralization. Other areas contain geothermal energy sources, copper, molybdenum, uranium, cobalt, chromium, platinum-group metals, barium, and lead. There is also potential for production of fluorine, tin, nickel, gold, tungsten, and antimony on these lands.

Opportunities

Minerals and energy production from public lands could be increased, while providing environmental safeguards. Such efforts would support the President's programs to improve the balance of payments and the Nation's strategic minerals and energy self-sufficiency. Opportunities for Forest Service action include:

-- Identifying access opportunities to mineral and energy resources.

-- Accelerating response time on all mineral leasing and permit requests.

-- Responding positively to Department of Energy coal production targets.

-- Planning and monitoring mineral and energy activities to promote prudent development and reclamation of disturbed areas.

-- Keeping mineral exploration and development options open on all public lands.

-- Working with mineral and energy companies to develop plans to aid present and future development.

-- Improving program efficiency through use of prediction techniques that indicate probable mineral developments.

-- Providing technical assistance on revegetation and reforestation of privately owned lands that have been disturbed by mineral production.

Alternative Goals and Implications

Alternative Goal 1

EXPAND MINERAL RESOURCE DEVELOPMENT ON NATIONAL FOREST SYSTEM LAND, WHILE EMPHASIZING STRATEGIC AND ENERGY MINERALS TO REDUCE IMPORTS, IN CONCERT WITH OTHER RESOURCE VALUES. IDENTIFY LANDS HAVING HIGH STRATEGIC AND ENERGY MINERAL POTENTIAL AND TAKE ACTION TO OPEN OR MAINTAIN ACCESS TO THESE RESOURCES.

Basis for Alternative Goal 1

This goal responds to the President's programs to improve the balance of payments and the Nation's

strategic mineral and energy self-sufficiency. The President has urged that steps be taken to assure reasonable access to the country's mineral resources and to facilitate development of these resources through expedient processing of required permits and applications. Although this goal would require increased program expenditures in the near term, future benefits would exceed the added costs by a significant margin. Minimum legal standards for environmental protection would be met or exceeded under this goal. Some previous land withdrawals would be reviewed to determine if existing mineral potentials justify declassification to support national objectives.

Implications of Alternative Goal 1

1. Investments.-- Achieving this goal would require increased funding of NFS minerals and geology programs and the prompt processing of existing backlogs of lease and permit applications and of all new applications. The existence of backlogs implies that applications are not processed as quickly as new ones are received. Applicants must delay exploration, development, or other activivities until the Forest Service approves the various applications. These delays frequently have significant financial implications for the applicants. The costs of idle equipment and lost loan commitments must be added to the total costs of the proposed projects. Although no estimates are available of the total cost of such delays, they have forced some projects to be delayed indefinitely.

During 1981, an estimated 19,000 applications were processed and about 11,300 remained in backlog at the end of the year, or 4,000 more than at the end of 1980. About 23,000 new applications were received during 1981. Current program objectives are to reduce the backlog to a manageable level within the next few years.

Increased investment levels would be needed to facilitate processing of new lease and permit applications and operating plans--which have increased dramatically in recent years and are expected to continue to increase--rapidly at first and more slowly in the future. A large share of the anticipated work load would be permitting, administering, and monitoring development and reclamation activities.

2. Outputs.--Under this goal, energy mineral outputs from NFS lands are expected to be approximately:

	1980 (Actual)	1990	2035
Oil (mil. bbl.)	12	105-110	135-140
Gas (bil. cf.)	222	1,000-1,100	1,300-1,400
Coal (mil. ST) (short ton)	6	45-50	55-60

In FY 1980, production of leasable minerals, primarily oil, gas, and coal, from NFS lands resulted in about $75 million being returned to the U.S. Treasury.

Outputs of common variety minerals under this goal are estimated as follows in millions of tons:

	1980	1990	2035
Minerals -- common variety	13	9-11	10-12
Commercial -- sand, gravel, stone	9	10-15	15-20

In FY 1980, production of common variety minerals resulted in about $12 million being returned to the U.S. Treasury.

The constant dollar value of locatable minerals produced on NFS lands would increase because of streamlined, more efficient management and administration of requests for approval of operating plans and special permits. Exploration and development of underground space (including natural caves and underground reservoirs) on NFS lands will be facilitated.

3. Prices.--Mineral and energy prices are expected to rise. However, increased domestic production of minerals should act to moderate price increases and, in some cases, dampen price fluctuations caused by the uncertainties or interruptions of foreign supplies. The same may be true for energy production, but with less certainty due to price control exercised by the Organization of Petroleum Exporting Countries (OPEC). It is generally true that price stability increases as domestic self-sufficiency increases.

The anticipated price moderation would be the result of reduced import dependence and improved supply reliability. Mineral processing industries and Government, the consumers in this case, may save several billion dollars for each percentage-point moderation in prices. If domestic production increases act to temper energy and mineral prices by only 2 percent, the cost savings to consumers would be at least $8 billion per year, based on current prices and consumption levels.

4. Nonrenewable resources.-- This goal would enable development of some of the country's sizeable mineral reserves. Although each mineral and energy commodity is unique in some respect, the U.S. mineral resource base is extensive and capable of supplying many needs through and beyond 2030. Eventually, technological changes, substitution, and conservation would work together to offset the impacts of rising cost due to declining ore grades.

Most of the petroleum development is expected to occur in the Eastern and Western Overthrust Belt areas. New investment, production, community expansion, employment, and processing facilities are expected in these areas. These changes will occur during the 1980's and 1990's. Beyond the year 2000, the growth in new development may occur more slowly and result in less pressure on social, environmental, and economic systems.

5. Renewable resources.-- Development of minerals and energy would to some degree interrupt use of renewable resources within development areas. However, good long-term planning, along with

required operating and reclamation plans, could provide opportunities for management of the renewable resources and access to them.

This goal would increase environmental impacts on lands where mining and mineral processing operations take place. However, mining is land intensive, as opposed to land extensive, and disturbs a relatively small total land base. Historically, surface mining activities have disturbed less than 0.10 percent of the total land area in the United States. This goal provides for protection of surface and renewable resources by requiring reclamation of mined lands within acceptable environmental and economic bounds.

Other resource values and long-term management objectives would be safeguarded by administration of existing laws and mining regulations.

6. Community, employment, and income.-- This goal would increase employment and income related to mining, processing, and transportation in many relatively remote areas. Significant economic and social effects would probably occur at the same time that local facilities and services were expanded to meet demand. Mineral processing industries would also expand. Associated industries, including machinery and equipment manfacturers, would benefit through increased demand for their products.

7. International trade.-- U.S. import dependence would be reduced, but not eliminated. This would have favorable effects on domestic energy and mineral-related industries in terms of production and employment levels and supply reliability. To the extent domestic production acts to moderate world prices, other importing countries will benefit. At the same time, exporters would have less price leverage.

8. Technology.--Implementation of this goal would spur research on the biological, physical, social, and economic impacts of mineral and energy development. Other studies would consider reclamation technologies and predictions of the timing of likely mineral and energy developments.

9. Legislative.--Achieving this goal would require the initiation of at least two legislative changes. First, lands identified as having high strategic and energy mineral potential would be declassified from existing wilderness and other classified areas. This would be approached on a case-by-case basis to facilitate development of strategic and energy minerals to serve identified national needs. Second, efforts would be made to extend the current 1983 cutoff date for leasing and prospecting in wilderness areas so that exploration can continue.

10. Economic efficiency.--Achieving this goal would require a higher level of Government expenditures. However, returns to the Government from lease rental fees and mineral royalties would increase. Although precise estimates do not exist, increased returns to the Government would exceed any needed increases in program funding to achieve this goal.

Alternative Goal 2

RESPOND TO PROPOSALS FOR MINERAL DEVELOPMENT ON NATIONAL FOREST SYSTEM LANDS, IN CONCERT WITH OTHER RESOURCE VALUES. GIVE EMPHASIS TO STRATEGIC AND ENERGY MINERALS.

Basis for Alternative Goal 2

This goal would strive to be responsive to mineral developments on NFS lands, but the Forest Service would not initiate actions to assure access to mineralized lands. Responsiveness to strategic and energy mineral activities would be emphasized and would support the President's program to improve the balance of payments and the Nation's strategic mineral and energy self-sufficiency. Minimum legal standards for environmental protection would be met or exceeded. To maintain reasonable response times to requests for approval of permits and applications would require some increase in program expenditures. However, returns to the Government would continue to exceed program costs.

Implications of Alternative Goal 2

The implications of this goal are basically the same as those described in alternative goal 1. However, in some cases, they would differ in degree because of the lower level of mineral production. That is, somewhat less moderation of prices and consumer costs would be expected for mineral and energy commodities; import reliance would not be reduced by as much; and environmental, employment, and income impacts would be somewhat less evident. Implications for investments, minerals processing industries, research activities, and nonrenewable resources would be approximately the same as for alternative goal 1. Gains in economic efficiency would occur because additional opportunities where benefits exceed expenditures would be captured, but at a somewhat lower level than for goal 1.

Yearly outputs for energy minerals under this goal would be:

	1980 (Actual)	1990	2035
Oil (mil. bbls.)	12	97-102	125-130
Gas (bil. cf)	222	900-950	1,200-1,300
Coal (mil. ST)	6	40-45	50-55

Yearly outputs for common variety minerals from NFS lands would be approximately as follows in million of tons:

	1980	1990	2035
Minerals--common variety	13	10-12	11-13
Commercial--sand, gravel, stone	9	15-20	20-25

Alternative Goal 3

RESPOND TO PROPOSALS FOR MINERAL DEVELOPMENT ON NATIONAL FOREST SYSTEM LANDS, IN CONCERT WITH OTHER RESOURCE VALUES. GIVE EMPHASIS TO STRATEGIC AND

ENERGY MINERALS. RESTRICT MINERAL DEVELOPMENT ON LAND WHERE OTHER RESOURCE VALUES ARE HIGH AND MINERAL VALUES APPEAR LOW.

Basis for Alternative Goal 3

This goal is intended to respond to mineral development only to the extent required under existing laws and to respond to pressing national needs for strategic and energy minerals. Where possible, marginal mineral developments, in terms of competing resource values or acceptable environmental impacts, would be restricted. Although returns to the Government would exceed program costs, the goal is only minimally responsive to Presidential directions. However, the goal would result in fewer environmental impacts because marginally acceptable developments would be restricted.

Implications of Alternative Goal 3:

The implications of this goal differ primarily in degree from those described for alternative goals 1 and 2. Development of nonenergy and nonstrategic minerals would be restricted by withdrawals and other authorities, particularly where values of other resources (for example, scenic, historic, wildlife, timber,) are nearly comparable to the mineral values and where the various impacts of mineral development would be only marginally acceptable. Moderation of prices and consumer costs would be less than for goals 1 and 2. Import reliance for most commodities would be reduced very little. Environmental, employment, and income impacts would be lower, but more geographically concentrated. This goal would afford little or no potential for increased economic efficiency. Implications for investments, minerals processing industries, research, and nonrenewable resources would be only slightly different from those for goals 1 and 2.

Yearly outputs for energy and minerals under alternative goal 3 would be approximately as follows:

	1980 (Actual)	1990	2035
Oil (mil. bbls.)	12	90-95	120-125
Gas (bil. cf)	222	850-900	1,100-1,200
Coal (mil. ST)	6	35-40	45-50

Yearly outputs for common variety minerals from NFS lands are estimated as follows, for alternative goal 3, in million of tons:

	1980	1990	2035
Minerals--common variety	13	11-13	12-14
Commercial--sand, gravel, stone	9	20-25	25-30

Comparison of Minerals and Energy Development Alternative Goals and Implications

	Goals		
	Goal 1	Goal 2	Goal 3
	Expand mineral resource development on NFS land, while emphasizing strategic and energy minerals to reduce imports, in concert with other resource values. Identify lands having high strategic and energy mineral potential and take action to open or maintain access to these resources.	Respond to proposals for mineral development on National Forest System lands, in concert with other resource values. Give emphasis to strategic and energy minerals.	Respond to proposals for mineral development on National Forest System lands, in concert with other resource values. Give emphasis to strategic and energy minerals. Restrict mineral development on land where other resource values are high and mineral values appear low.
	Implications		
Investments	Increase investments in NFS minerals and geology programs. Requires processing of existing backlog of lease and permit applications and all new applications.		
Outputs Oil: mil. bbl.	Oil outputs 1990: 105-110 2035: 135-140	Oil outputs 1990: 97-102 2035: 125-130	Oil outputs 1990: 90-95 2035: 120-125
Gas: bil. cf	Gas outputs 1990: 1,000-1,100 2035: 1,300-1,400	Gas outputs 1990: 900-950 2035: 1,200-1,300	Gas outputs 1990: 850-900 2035: 1,100- 1,200
Coal: mil. ST Com. variety: mil. ST	Coal outputs 1990: 45-50 2035: 55-60	Coal outputs 1990: 40-45 2035: 50-55	Coal outputs 1990: 35-40 2035: 45-50
	Min.-common variety 1990: 9-11 2035: 10-12	Min.-common variety 1990: 10-12 2035: 11-13	Min.-common variety 1990: 11-13 2035: 12-14
	Commercial-sand, gravel 1990: 10-15 2035: 15-20	Commercial-sand, grav. 1990: 15-20 2035: 20-25	Commercial-sand, grav. 1990: 20-25 2035: 25-30
Prices	Moderation of mineral and energy price increases	Some moderation of mineral and energy price increases	Little moderation of mineral and energy price increases
Economic efficiency	Offers greatest potential for increased efficiency	Offers somewhat less potential for increased efficiency	Offers little or no potential for increased efficiency
Nonrenewable resources	Enable development of some of the country's sizeable mineral resources.		
Renewable resources	Interrupt, to some degree, use of renewable resources within development areas. Could provide access and later management opportunities		
Environment	Protection of surface and ground water resources by requiring reclamation of mined lands		
	Increases impacts on lands where mining and processing take place	Some increased impacts on lands where mining and processing take place	Fewer impacts, but somewhat more geographically concentrated

Implications (continued)

Community, employment, and income	Increased employment and income in remote areas with significant social and economic developments	Similar impact, but slightly more geographically concentrated
International	U.S. import dependence reduced	Little effect on U.S. import dependence
Technology	Biological, physical, social, and economic research. Studies on reclamation technology and prediction of developments	
Legislative	Legislation would be sought to declassify existing classified areas and extend the 1983 cutoff date for leasing and prospecting	No legislation needed

Needs and Opportunities

The Demand and Supply Outlook

While the United States has an abundant supply of water, its distribution varies greatly across the Nation. In many areas, the demand for water vastly exceeds supply, and an inadequate water supply is already a limiting factor in resource development and economic growth. Water supply projections show the situation becoming worse.

By the year 2000, persons living in 17 major river basins in 11 States in the Southwest and Midwest and in localized areas in the Northwest and East will suffer serious water supply problems. The Second National Water Assessment has projected that average streamflow in these river basins will be 70 percent depleted by the year 2000. An estimated 38 river basins in 19 States, including States on both coasts and in Puerto Rico, are already experiencing reductions of ground water. Projected demands for water will be acute in the more arid sections of the Nation, reflecting competition for available supplies among agriculture, energy development, and municipal and industrial use. Demands for water for nonconsumptive purposes related to wildlife and fish resources, hydroelectric development, recreation, navigation, and maintenance of wetlands will also increase. New capital investments, maintenance of existing investments, and technological developments will be needed to avoid further aggravation of water shortages.

The total average annual water yield from forest and range lands in the contiguous 48 States is estimated to be about 1.3 billion acre-feet. Preliminary estimates of the potential for increasing this yield through vegetation and snow management techniques range from 1 million to 4 million acre-feet per year. This estimate reflects multiple-use considerations. Opportunities for increased water yield from National Forest lands in water-short areas will be defined in the National Forest planning process currently underway.

There are several factors that cloud the ground water supply picture, including the following: (1) there is a general lack of State regulatory control over ground-water management; (2) there is a dearth of information on National Forest lands (and most Federal lands) about the extent to which ground water is necessary for maintenance of surface ecosystems; and (3) there is no established methodology by which such needed ground water data can be quantified.

The natural quality of surface and subsurface water also varies considerably across the Nation. In addition, it varies from place to place and from time to time on any particular stream, depending largely upon the nature of the watershed and the occurrence of storms. Pollution is found at one time or another in surface and subsurface waters of all States. Water pollution from point sources, such as a discharge from a pipe, has been recognized as a problem in 91 percent of the 246 hydrologic basins in the United States. Nonpoint source pollution, such as runoff from a rural area, occurs in

87 percent of the basins. Dispersed agricultural sources, municipal and industrial wastes, acid mine drainage, and accelerated urban runoff are the most significant causes. Acid rain also affects water quality, particularly in the Northeast and Great Lake States. By volume, sediment is the number one pollutant. Erosion from croplands contributes about half of the total sediment to streams from nonpoint sources, but mining, construction, logging, and reforestation practices are also significant sources in some areas during, and for several years after, the activity.

Water quality needs vary depending on use. Demand to maintain or improve water quality to allow for a greater variety of uses is expected to increase.

About 175 million acres of land scattered throughout the Nation are flood prone. Twenty-one thousand communities are subject to some degree of flooding. Demand for better control of runoff from flood source areas and for reduction of flood hazards downstream will increase as property values rise and improvements are installed in flood prone areas.

Social, Economic, and Environmental Effects

Competition for available water supplies, the cost to consumers, and impacts on the water resource are increasing, especially in water-short regions. In many cases, these increases reflect the demand for large volumes of water needed to produce energy. Water needed for consumptive use for energy development and the urban expansion that accompanies it will be diverted from long established agricultural use and will change on-site characteristics.

Proposals for new reservoirs, canals, and pipelines will raise questions concerning the equitable distribution of available supplies. The needs of municipalities and energy producers will conflict sharply with those of agriculture, wildlife, and recreation. The conflicts between municipal, industrial, and agricultural use and need will alter land use patterns, the cost of living, and the lifestyle of Americans.

Disposal of organic, inorganic, and thermal wastes will affect the quality of water from all sources and continue to be a public concern. Problems associated with salinity are increasing and of serious public concern in such locations as the lower Colorado River Basin and parts of California.

In 1975, 107 people were drowned nationwide by flood waters and property damage was estimated at $3.4 billion. By the year 2000, flood damage is expected to increase to $4.3 billion annually.

Resource Base

The United States contains 736 million acres of forest land. About 286 million acres are in Federal ownership and 451 million acres are in State and private ownership. These forested lands produce about 65 percent of the Nation's total streamflow. On the average, they yield about 17 inches of runoff compared to 4 inches from nonforested lands because of their location in areas of higher

precipitation. In addition to being the source of water for most perennial streams, forests are important recharge areas for ground water systems, including aquifers. Water, as one of the renewable resources, is also extremely valuable for its hydropower potential.

The 820 million acres classified as rangeland are also important watersheds. Though these lands receive less precipitation than forests and contribute less runoff, they include vegetative types that lend themselves to water resource improvement programs.

Although most forest and range lands produce water of high quality, they can be significant sources of nonpoint pollution in some local situations. Use and treatment of the land has a direct bearing on the quality of water it produces.

Over a third of the total forest and range land, 600 million acres, would benefit from watershed improvement practices. Specific treatments would depend upon the benefits desired: yield improvement, quality improvement, or flood prevention.

Opportunities

Forest and range lands can simultaneously produce increased supplies of high quality water and timber, forage, wildlife, and opportunities for outdoor recreation. The relationship between water quality and yield and competitive or complementary resource uses and values must be evaluated on a case-by-case basis. There are some situations where effective management strategies can increase yields of high quality water, while protecting the basic resource. Opportunities to apply these strategies exist on lands in State and private ownership as well as on Federal holdings.

Forest Service opportunities for improving water yields would include low investment costs and would not require new capital investments. Most opportunities would deal with vegetative manipulation during ongoing management activities, and costs would be offset by associated benefits such as increased range production and timber values and decreased cost of fire protection.

In the list below, major opportunities for Forest Service programs are indicated by an asterisk, *:

Water quality can be improved by:

*-- Applying watershed improvement practices on disturbed watersheds.

*-- Implementing management practices designed to reduce erosion and maintain or improve site productivity.

*-- Reducing nonpoint water pollution from forest and range lands through applications of improved fire protection, engineering, and land management technology.

*-- Acquiring deteriorating privately owned watershed areas and restoration of the land to natural and productive conditions.

Water yield can be increased by:

-- Weather modification (cloud seeding).

*-- Vegetative manipulation to reduce evapotranspiration and to influence the distribution and melting of snow where applicable. Timber harvest, brush control, and range improvement projects are examples.

Flood damage can be reduced by:

-- Proper siting of improvements away from floodplains.

*-- Managing vegetative cover to reduce volume and peaks of streamflow and the threat of large fires.

*-- Installing structures to regulate the release of flood flows.

-- Discouraging disaster aid and insurance for structures constructed in floodplains.

Extension of existing water supplies can be achieved by:

-- Greater reuse of water.

-- Water conservation.

*-- Recognizing and protecting aquifer recharge sites.

*-- Water spreading practices during periods of high water runoff and greater use of ground reservoir storage and high altitude surface storage to reduce evaporation losses and to regulate flow.

-- Revision of the current legal structure for allocating and pricing water.

Research can be conducted to develop new methods for water management and to develop additional ways to conserve water. This would include development of methodology for quantifying ground-water needs for adequate surface and subsurface water interaction.

New demonstration areas can be provided to inform landowners and managers of management strategies that have demonstrated the capability to increase yields of high-quality water while protecting the basic resource.

Technical assistance can be provided concerning the management of municipal watersheds for multiple resource benefits.

Effective water management programs require investment and commitment by all landowners and users. In some cases, entire watersheds need treatments to be most cost effective. Private landowners will need technical and financial assistance to carry out water management programs. States and the Federal Government must cooperate closely on resolution of ground water-related problems.

Watershed management programs that are implemented must be evaluated by monitoring a program to determine if established goals and targets are being

achieved and to provide information on needed program modifications.

Alternative Goals and Implications

Alternative Goal 1

MANAGE FOREST AND RANGE LAND RESOURCES TO MAINTAIN CURRENT WATER YIELD, MEET WATER QUALITY REQUIREMENTS, AND PREVENT INCREASED FLOOD HAZARDS.

Basis for Alternative Goal 1

This goal responds to the basic charge specified in the Organic Administration Act, the Weeks Act, and the Multiple Use-Sustained Yield Act to maintain favorable conditions of waterflows from the National Forest System. It also responds to congressional direction under the Clean Water Act and the Cooperative Forestry Assistance Act to protect the quality, quantity, and timing of water yields from all forested lands. This goal represents the minimal program level needed to meet legally mandated water quality management. Water yield improvement and reduction in flood hazard would be incidental to other management practices. This level of management would not capture all economic opportunities.

Implications of Alternative Goal 1

1. Investments.--Achievement of alternative goal 1 would be the least costly of the alternatives presented. Activities would be limited to those needed to protect the public and its property and to provide a minimum level of research and technical assistance to the States. The Forest Service will utilize and participate in P.L.-566, P.L.-534, and Rural Community and Development (RC&D) programs.

2. Economic efficiency.--This goal would not capture all economic opportunities available to the Forest Service on National Forest lands to increase water yields and water quality or prevent damage from flooding. Similarly, only limited support would be provided to State and private efforts to capture such opportunities.

3. Outputs.-- Water from National Forest lands would meet established quality standards, and soils and water resource improvement projects would be concentrated on watersheds with declining conditions that adversely affect water quality. Research, technical assistance to the States, and NFS programs would utilize existing technology to provide for the development and application of management practices to protect water quality. Current water yield conditions and flood source areas would remain relatively unchanged. Outputs of other forest and range commodities would be produced at somewhat higher levels on the treated watersheds.

4. Prices.--Prices of goods and services from forest and range lands would not be significantly affected by activities undertaken to meet this goal.

5. Nonrenewable resources.--This goal would maintain basic soil stability and productivity.

6. Renewable resources.--Under this alternative goal, water yield and quality would be maintained

and there would be no reduction of flood potential or hazards.

7. Community.--Soil and water improvements and management practices applied to control water pollution would benefit many communities. However, this goal would not address the problems of communities facing water shortages or loss of life and property due to floods.

8. Employment and income.--Employment and income would be favorably affected, but these effects would be the lowest under this alternative goal.

9. Technology.--Research under this goal would focus on watershed protection, improved road building, economies of water yield enhancement, and effects of management practices on soils and water quality and quantity. Studies would also be undertaken on the impacts of acid rain on forests, pollution abatement technologies, land methodology to quantify ground water needed for surface and subsurface water interactions, reclamation and rehabilitation, snow management practices, and the nature of range watersheds.

Alternative Goal 2

MANAGE FOREST AND RANGE LAND RESOURCES TO INCREASE WATER YIELD IN SELECTED WATER-SHORT AREAS, MEET WATER QUALITY REQUIREMENTS, PREVENT INCREASED FLOOD HAZARDS, AND LIMIT FLOOD HAZARD REDUCTION TO HIGH VALUE AREAS.

Basis for Alternative Goal 2

Goal 2 is intended to capture cost-effective opportunities based on direct benefits from programs to increase water yield and reduce flood hazard, while meeting the water quality objectives of goal 1. The water yield increases would be targeted for municipal, industrial, and energy use. Flood hazard reductions would be concentrated on forested watersheds that contribute to frequently occurring floods that result in loss of life or extensive property damage. The Forest Service would expand participation in and supplement Departmental administration of P.L.-556, P.L.-534, and RC&D flood reduction programs. As compared to goal 1, goal 2 research efforts would be intensified to develop and evaluate cost-effective methods.

Implications of Alternative Goal 2

1. Investments.--Alternative goal 2 would require greater Government investments than alternative goal 1, principally for soil and water improvements, increased technical and financial assistance to the States, and added emphasis on research development and application to increase water yield. This alternative would allow the Forest Service to provide technical assistance to States for water yield augmentation. Several Western States have funds from energy development available to increase water yield projects, but lack technical expertise to implement them. Soil and water resource improvement activities would be carried out on 75 percent of the areas with declining watershed conditions to meet water quality

standards. It is estimated that 300,000 acres of National Forest lands are in declining watershed condition. An inventory of the acres of State and private lands needing similar treatment has not yet been made. This would include working cooperatively with the States to better understand, quantify, and manage ground water resources.

2. Economic efficiency.--This goal would capture the cost-effective opportunities available to the Forest Service to increase water yields and prevent flood damage.

3. Outputs.--Soil and water resource improvement activities would be carried out on 75 percent of the areas with declining watershed conditions. New or improved technology for protection of water quality and water yield would be developed and applied. By 1987, an inventory would be made of the specific opportunities and needs for managing forest and range lands to increase water yield, with particular emphasis on:

-- Chronically water-short areas.

-- Municipal, industrial, and energy needs.

-- Use of consistent physical, economic, and social criteria for evaluating investments.

The value of water will be determined by the ultimate use to which it is put (marginal uses). A vegetative management program to increase water yield where benefits exceed cost, or where there is an overriding social need, would begin in 1988 and be completed by 2030. Flood hazard reduction would be implemented on 20 percent of current flood source areas by the year 2000 and on remaining areas by the year 2030.

4. Prices.--Costs of timber production would be increased approximately 5 percent because of using cutting practices to increase water yield; however, favorable benefits would be achieved overall. Prices of goods and services from forest and range lands would not be significantly affected. Some reduction in the cost of doing business may occur as new or improved technology is developed. Increased supplies of water will accrue to the marginal uses (typically agriculture). However, increased supplies of water tend to reduce the cost of water to all users. In some areas, where water is the limiting factor, increasing supplies may allow industrial, municipal, and energy development.

5. Nonrenewable resources.--Elimination of declining watershed conditions would improve opportunities for greater production and use of forest and range lands.

6. Renewable resources.--Water yields would be increased to the extent feasible where justified by benefits and costs. Flood hazards would be reduced from the most serious flood source areas on forest and range lands by participating in U.S. Department of Agriculture flood programs and by treating declining watershed conditions.

7. Community.--Alternative goal 2 would provide greater benefits to some communities than would goal 1 because of increased water supply and reduced flood damage.

8. Employment and income.--There would be a modest increase above alternative goal 1 in employment opportunities and in income levels.

9. Technology.--Research efforts would be intensified compared to alternative goal 1.

Alternative Goal 3

MANAGE FOREST AND RANGE LAND RESOURCES TO INCREASE WATER YIELD IN SELECTED AREAS, IMPROVE WATER QUALITY, AND REDUCE FLOOD HAZARDS WHERE COST EFFICIENT.

Basis for Alternative Goal 3

Goal 3 would strive to capture all physical production opportunities on forest and range lands for improving water yields and water quality, and for reducing flood-producing runoff. The most economical opportunities would be sought; however, both direct and indirect national benefits must be included to offset costs. Opportunity costs would be highest with utilization of other forest resources being constrained by watershed management. A notable aspect of this goal is increased emphasis on research development and demonstration areas in support of the goal. It would have the highest employment and social benefits of any goal and would require the greatest commitment and investment by the private sector.

Implications of Alternative Goal 3

1. Investments.--This investment for flood hazard reduction would be the same as goal 2. Forest Service investments to increase water yield and quality would be expanded above goal 2. The Forest Service would continue to participate in P.L.-566, P.L.-534, and RC&D programs and would expand treatment of declining watershed conditions from 50 percent to 100 percent. It would provide an integrated approach to deal with the many water resource situations identified in the demand-supply discussion, utilizing a strong State-led water resources planning and development approach with Federal assistance where appropriate.

2. Economic efficiency.--Economic efficiency would be considered for all projects, but direct benefits would be controlling factors only for flood hazard reduction projects. Both direct and indirect benefits would be used to determine economic efficiency for other programs.

3. Outputs.--Alternative 3 would result in the highest outputs of soil and water. Efforts to maximize water outputs may result in some tradeoffs in the form of lower outputs for other forest and range commodities.

4. Prices.--This alternative goal would tend to reduce the price of water but would put the greatest upward pressure on the prices of other forest and range commodities.

5. Nonrenewable resources.--Improvement of soil and water resources would enable greater production from and use of forest and range lands.

6. Renewable resources.--Water yields and water quality would be maximized. Flood prevention

would be increased to the extent feasible where justified by benefits and costs.

7. Community.--This goal potentially would provide the greatest benefits because of increased supplies of high-quality water and protection from flood damage. Some offsetting adverse effects could result from reduced production of other forest and range commodities arising from constraints imposed to meet soil and water goals.

8. Employment and income.--This alternative goal would result in the greatest increase in municipal, industrial, and energy development with associated employment and income benefits. However, the overall increase may be reduced somewhat by lower timber and range outputs in some areas.

9. Technology.--This alternative goal would result in the greatest expansion of research effort.

Comparison of Water Yield and Quality Alternative Goals and Implications

	Goals		
	Goal 1	Goal 2	Goal 3
	Manage forest and range land resources to maintain current water yield, meet water quality requirements, and prevent increased flood hazards.	Manage forest and range land resources to increase water yield in selected water-short areas, meet water quality requirements, prevent increased flood hazards, and limit flood hazard reduction to high value areas.	Manage forest and range land resources to increase water yield in selected areas, improve water quality, and reduce flood hazards where cost efficient.
	Implications		
Investments	Least costly in terms of Forest Service expenditures and foregone opportunity costs	Modest increase in Forest Service expenditures. Costs beyond 1995 could be large. A modest reduction in costs of emergency flood prevention	Most costly alternative goal. Large increases, particularly after 1995. Costs of emergency flood prevention would be minimized
	Some increased investment commitment would be needed from States and private landowners	A moderate investment and commitment would be needed from States and private landowners	A major cooperative effort and large investments and commitments would be needed from State and private landowners
Economic efficiency	Would not capture all economic opportunities	Would capture the economic opportunities based on direct costs	Both direct and indirect benefits would be used to determine economic efficiency
Outputs	50% reduction in National Forest acreage now in declining watershed condition	75% reduction in National Forest acreage now in declining watershed condition	100% reduction in National Forest acreage now in declining watershed condition
	Establishment of a limited number of demonstration areas	New demonstration areas would be established in selected water resource regions	New demonstration areas would be established in each water resource region where water yield improvement projects are determined to be feasible
	Water yield-maintained	Water yield--increased	Water yield--maximized
	Promotion of sound management of soils and of surface and ground water resources		
	Water meeting quality standards	Water meeting quality standards	Water meeting and exceeding quality standards
	Flood hazard--prevent increase	Flood hazard--reduced based upon PNV	Flood hazard--reduced based upon PNV

Implications (continued)

Outputs	Minor increase in new and improved technology	Modest increase in new and improved technology	Further increase in new and improved technology
	Modest increase in technical assistance and technology	Significant increase in technical assistance and technology transfer	Major increase in technical assistance and technology transfer
Prices	Water--minor reduction	Water--moderate reduction	Water--largest reduction
Nonrenewable resources	Maintain basic soil productivity	Enhance soil productivity	Greatest soil productivity
Renewable resources	Water yield would be maintained	Water yield increased where benefits exceed costs	Water yield maximized
Community	Least benefits	Greater benefits	Greatest benefits
Employment and income	Lowest benefits	Modest increase	Greatest increase
Technology	Maintain research efforts	Increased research efforts	Greatest research efforts

Needs and Opportunities

The Demand and Supply Outlook

From 1920 to 1979, the U.S. population doubled, growing by 98 million people to over 200 million. Another 81 million are expected by 2030. Rapid growth will occur in the Southern and Pacific Coast States with smaller increases in the Rocky Mountain States. The growth rates vary between urban and rural areas, but during the last 10 years, rural areas grew at almost twice the rate of urban areas.

Rural areas, with one-third the Nation's population, contain about 40 percent of the Nation's poor. Forty percent of the Native Americans, 38 percent of the blacks, 28 percent of the Hispanics, and 11 percent of the whites in rural areas live on incomes below poverty levels. Unemployment is also more prevalent in rural areas, and this will continue unless job opportunities are provided. Also, rural workers are often paid less than their urban counterparts. Obviously, unemployment and low wages are not problems in every rural community. However, in those communities near National Forests where these problems exist, the Nation's forest and range resources can be used to create job opportunities and enhance community income. Development of these resources will make possible the improvement of rural community services and the standard of living of rural people.

Social, Economic, and Environmental Effects

The social and economic conditions in many rural communities can be improved through the addition of jobs and training programs. The additional income generated within the community may be used to improve housing and community services. Further, additional jobs will provide stability to a community by permitting local youth to remain in the area instead of migrating to larger communities. Job training, keyed to the requirements of the community, will improve the skills of local residents and allow them to be competitive for the new jobs that would be created. Much of the work that would be undertaken could be aimed at environmental improvements in and around the community.

Resource Base

The country's 736-million-acre forest and 820-million-acre range resource base provides a large arena for improving employment opportunities in rural areas. Labor-intensive management opportunities such as timber stand improvement, tree planting, campground and trail maintenance, and capital investment projects exist on all forest and range ownerships in all areas of the Nation. Jobs are provided by the harvesting and milling of timber, raising of range animals, and recreation and tourism. The citizens themselves are a valuable resource. This combination of valuable natural resources and a dependable supply of labor is the major resource of rural America.

Opportunities

The 190 million acres of National Forest and Grasslands provide direct jobs through forest and range products industries--through harvesting and

manufacturing forest and range products, contracting and hiring for natural resource and other conservation work, attracting recreationists who support the tourism industry, and providing a base for civilian conservation employment.

Presently, the productivity of National Forest lands is below its economic and biological potential, resulting in deferred opportunities for forest and range resources to contribute to the national well-being. There is an estimated $1.2 billion backlog in critically needed conservation work. The Forest Service is in a good position to administer directly funded programs and to provide work opportunities under hosting arrangements for employment and training programs carried out by State and local governments and other Federal organizations. The value of the funds spent to increase growth of timber and forage or maintain and improve facilities is substantial. These growth activities especially tend to increase the value of the investment.

The 280 million acres of private nonindustrial forest lands also provide numerous job opportunities for rural residents--through harvesting and manufacture of forest products and silvicultural activities. Many private forest ownerships are below their economic and biological potential, resulting in lost income for landowners, lost job opportunities for rural residents, and the loss of forest products to the Nation. Through increased participation in cooperative forestry and incentives programs, landowners can improve their incomes, while enhancing their resource base, and also contribute to improved social, economic, and environmental conditions in rural areas.

The 30 million acres of State and county forest lands also provide a resource base for expanded rural employment. State forests have a backlog of conservation work that can provide employment for rural citizens. State Foresters can also host directly funded youth, young adult, and senior citizens conservation programs.

In towns and small cities, the community forestry program can be used to improve the livability of urban areas. Jobs are provided for people, urban forest resources are used that would otherwise be wasted, and city landscapes are beautified.

There are many rural areas with little or no fire protection. Many areas are outside organized fire districts, but are not protected by Federal or State wildfire control organizations. The Rural Community Fire Protection (RCFP) program can be used to improve this situation. The program provides limited funding, but mostly it helps citizens help themselves through local involvement and control.

Alternative Goals and Implications

Alternative Goal 1

PROVIDE JOB OPPORTUNITIES IN HIGH-PRIORITY NATURAL RESOURCE WORK THROUGH PARTICIPATION IN THE EMPLOYMENT PROGRAMS OF OTHER AGENCIES ONLY WHEN THEY CLEARLY CONTRIBUTE TO THE ACCOMPLISHMENT OF FOREST SERVICE OBJECTIVES.

Basis for Alternative Goal 1

This goal would limit Forest Service participation in rural community and human resource programs to instances where benefits to the Forest Service from the work of the participants clearly outweighs costs in terms of Forest Service appropriations, staffing, and management time and effort. The social benefits resulting from such programs would not be considered in determining cost-benefit relationships. This goal would cause the Forest Service to withdraw from current programs that emphasize training and that return less than a dollar in resource work for every dollar spent.

Implications of Alternative Goal 1

1. Investments.--This goal continues Forest Service programs to generate forestry opportunities to accommodate rural community growth at the 1980 level. It will require a moderate level of investment in Human Resource Programs (HRP), Rural Community Fire Protection (RCFP), and Urban and Community Forestry (U&CF).

2. Renewable resources.--Implementation of this goal will result in a small reduction in the backlog of needed conservation work by 1990 with continuation of the backlog beyond 2030.

3. Economic efficiency.--With this goal the costs would equal or be less than the economic benefits to the Forest Service. Each type of program would return a minimum of one dollar's worth of resource work for every dollar invested. This goal would handicap the Forest Service in reducing its critical backlog of conservation work.

4. Community.--This goal will require limited participation by Forest Service employees in the U.S. Department of Agriculture committee structure for rural development at the State and county levels. It will probably include only rural development, land use, emergency operations, and those networks that would help meet National Forest objectives. Through cooperative programs, about 2,500 small cities and towns will receive improved fire protection and about 3,700 will be involved in a community forest program to help improve urban environments.

Native Americans and Alaska Natives would participate occasionally in the cooperative forestry programs.

5. Employment and income.--Ten thousand enrollees would participate in Human Resource Programs and be provided training for permanent employment in the private sector. Cooperative forestry assistance and incentives programs funded at 1980 levels would provide some added employment and income potential for rural residents.

6. Technology.--Research will continue at the 1980 level to provide technology to manage urban and community forests and to increase benefits such as property values, employment stability and growth, and energy conservation.

Alternative Goal 2

PROVIDE JOBS AND TRAINING FOR UNEMPLOYED AND UNDEREMPLOYED PERSONS IN HIGH-PRIORITY NATURAL RESOURCE WORK THROUGH EXISTING PROGRAMS OF THE FOREST SERVICE AND OTHER AGENCIES.

Basis for Alternative Goal 2

This goal would allow the Forest Service to participate in the programs of other agencies or carry out programs of its own wherever the specific objectives of the program, such as providing employment and training to disadvantaged and underemployed youth or senior citizens, can be met by providing work in the Forest Service. Benefits would be calculated on social as well as natural resource accomplishments. Work opportunities would be related only to high-priority jobs of the Forest Service. This alternative is largely a continuation of current policies.

Implications of Alternative Goal 2

1. Investments.--This goal provides for a moderate increase above 1980 levels in Forest Service programs to generate opportunities to accommodate rural community growth. It would require high levels of investments in Human Resource Programs, Rural Community Fire Protection, and Urban and Community Forestry.

2. Renewable resources.--Implementation of this goal will result in a 25-percent reduction in the backlog of needed conservation work by 1990 and completion of the backlog sometime after the year 2030.

3. Economic efficiency.--The mixture of programs presently in operation are work, work-training, and training. In the past, overall cost benefit in these programs has been based on a return in excess of one dollar for every dollar invested toward accomplishment of natural resource work; however, the social benefits are not reflected in this amount. For example, in 1980, the total funding of Human Resource Programs of the Forest Service was $160.74 million; value of the work accomplished was $171 million; and 72,400 persons were served. Tangible social benefits include reduction of unemployment and welfare payments. Intangible social benefits realized are: increased self-worth, skills training, increased future productive capacity, and a break in the cycle of poverty.

4. Community.--This goal requires participation by Forest Service employees in most facets of the U.S. Department of Agriculture committee structure for rural development at the State and county levels. This would include rural development, land use, rural clean water, emergency operations, and others on a priority basis when they can be used to help promote Forest Service program objectives. Through cooperative programs, about 3,000 small cities and towns would receive improved fire protection, and about 4,200 will be involved in a Forest Service community forestry program to help improve urban environments.

Forest Service dealings with Native Americans and Alaska Natives would be at a moderate level and tribes and villages would participate to some extent in cooperative forestry programs.

5. Employment and income.--Twenty-five thousand enrollees would participate in Human Resource Programs and be provided training for permanent employment in the private sector. Increased funding for cooperative forestry assistance and incentives programs would provide additional jobs for rural residents in high-priority natural resource works on private lands.

6. Technology.--Research will be aimed at improving the management of urban and community forests to increase the flow of products and services, such as outdoor recreation, on which these communities depend and developing fire protection innovations.

Alternative Goal 3

PROVIDE JOBS AND TRAINING FOR UNEMPLOYED AND UNDER-EMPLOYED PERSONS IN HIGH-PRIORITY NATURAL RESOURCE WORK THROUGH THE USE OF EXISTING PROGRAMS AND THE INITIATION OF SPECIAL FOREST SERVICE PROGRAMS FOR THIS PURPOSE.

Basis for Alternative Goal 3

Goal 3 would establish community and human resource objectives as basic objectives of the Forest Service. Both benefits from the accomplishment of natural resource objectives and benefits from the accomplishment of social goals would be used to establish program levels. The Forest Service would consider alternative programs directed to local communities and populations with chronic unemployment and low incomes. Programs would substitute wage opportunities and income for Federal, State, and local welfare payments.

Implications of Alternative Goal 3

1. Investments.--This goal represents a significant increase from 1980 levels in Forest Service programs to generate forestry opportunities to accommodate rural community growth. It would require the highest level of investments in the Human Resource Program, Rural Community Fire Protection, and Urban and Community Forestry programs. Increased investments would be primarily for initiation of special Forest Service programs designed to meet employment and training needs of rural residents on National Forest lands.

2. Renewable resources.--Implementation of this goal would result in a 30-percent reduction in the backlog of needed conservation work by 1990 and completion of the backlog by the year 2030.

3. Economic efficiency--costs vs. economic benefits to Forest Service programs.--Direct benefits to the Forest Service would be a maximum of 50 percent. Direct and indirect benefits to the Nation as a whole would make up the other 50 percent. Potential return would be much greater than the initial cost because of decreased transfer payments. This type of public service employment eases the strain on the work force, provides a substantial contribution in conservation work, reduces the impact on welfare and unemployment compensation funds, and allows the Forest Service to employ a

greater number of minorities and women. Indirect benefits would include the hiring of staffs to run the programs, thereby putting more money into the local community.

4. Community.--Goal 3 would require participation by Forest Service employees in all facets of the U.S. Department of Agriculture committee structure for rural development at the State and county levels. This would include rural development, land use, rural clean water, emergency operations, and others designed to improve delivery of Departmental programs to rural citizens. Through cooperative programs, about 4,000 small cities and towns would receive improved fire protection and about 4,800 will be involved in a community forestry program to help improve urban environments.

Forest Service dealings with Native Americans and Alaska Natives would be at a high level. Tribes and native villages would participate in all levels of forestry programs.

5. Employment and income.--Forty thousand enrollees would participate in Human Resource Programs and would be provided training for permanent employment in the private sector. Increased funding for cooperative forestry assistance and incentives programs would provide additional jobs for rural residents in high-priority natural resource work on private lands.

6. Technology.--Research will be aimed at increasing the long-term stable production of goods and services to a high enough level that employment in dependent rural industries will be increased. Research activities will include discovering methods to increase outdoor recreation opportunities and developing fire protection innovations. Research will be directed toward both public and privately owned lands.

Comparison of Rural Communities and
Human Resources Goals and Implications

	Goals		
	Goal 1	Goal 2	Goal 3
	Provide job opportunities in high-priority natural resource work through participation in the employment programs of other agencies only when they clearly contribute to the accomplishment of Forest Service objectives.	Provide jobs and training for unemployed and underemployed persons in high-priority natural resource work through existing programs of the Forest Service and other agencies.	Provide jobs and training for unemployed and underemployed persons in high-priority natural resource work through the use of existing programs and the initiation of special Forest Service programs for this purpose.
	Implications		
Investments	Continuation of current program--moderate level of investment	Moderate increase in current program--high level of investment	Significant increase in current program--highest level of investment
	...in Human Resource Programs, Rural Community Fire Protection, and Urban and Community Forestry		
Renewable resources	Small reduction in conservation backlog by 1990	25% reduction in conservation backlog by 1990	30% reduction in conservation backlog by 1990
Economic efficiency	Cost would be less than the direct benefits to the Forest Service	Programs would result in an excess of $1 benefits for every dollar invested	Benefits to both the Forest Service and society must be included to justify costs
Community rural development (RD)	Limited Forest Service participation in State RD committee work	Forest Service participation in most State RD committees only	Forest Service participation in all appropriate USDA rural activities
Rural community fire protection	Assist 2,500 towns	Assist 3,000 towns	Assist 4,000 towns
Community forestry	Assist 3,700 cities and towns	Assist 4,200 cities and towns	Assist 4,800 cities and towns
Indian affairs	Limited involvement with Indians	Moderate involvement with Indians	High involvement with Indians
Employment and income	Some added employment in rural areas	Increased employment in rural areas	Significantly increased employment in rural areas
HRP (enrollees)	10,000	25,000	40,000
Technology	Current studies at 1980 level will be aimed at community forests at sufficient level to increase human benefits and property values	Aimed at improving management of community forests to increase flow of products and services and give adequate fire protection	Increasing the long-term stable production of goods and services sufficiently to increase rural industries

Needs and Opportunities

The Demand and Supply Outlook

The greater part of the world's land surface is covered by some form of natural vegetation and, in broad terms, can be called forest and range land. Most of this land is valued for yields of wood and forage. However, all of it is valuable for other uses such as water production, wildlife habitat, and outdoor recreation, as well as for broader environmental and ecological reasons.

With present investments in management, rising demands of a rapidly expanding world population currently exceed the capacity of forest and range lands to sustain the broad and balanced mix of uses that are necessary for a stable and productive society. Of particular significance is the ongoing destruction of forests in the humid tropics and in the arid and semiarid regions of the world. The resulting environmental consequences threaten not only future wood and forage supplies, but also food production and habitability of the land itself.

Close to half of the world population depends on wood for fuel. At least half the timber cut in the world, and 80 percent of all wood consumed in developing countries is used for fuel. In the woodlands and savannahs of the semiarid tropics and subtropics, fuelwood supplies already fall short of needs in many locations and are being depleted at rates far in excess of the land's capacity to replenish them under present use and management practices. If present trends continue until 2000, nearly 3 billion people will be affected by fuelwood shortages.

Demand for industrial wood products is also growing more rapidly than supplies. Further, the area of forest land used for production of industrial wood is declining. For example, conversion of forests to shifting agricultural use and wasteful logging practices in the tropics are expected to reduce this source of industrial wood by about one-half over the next 20 years.

In addition to increasing demands for wood and forage, the demands for all other forest and range products such as water, outdoor recreation, and wildlife habitat are rising rapidly. These demands cannot be met unless present use practices are changed and investments in management programs are greatly increased.

Social, Economic, and Environmental Effects

Within developing nations in tropical regions, the environmental and social implications of the foregoing outlook are forbidding. Tropical moist forests represent complex and fragile relationships of vegetation, soil, rainfall, and temperature. Present deforestation throughout the tropics is resulting in siltation of rivers, lakes, irrigation systems, and reservoirs behind hydroelectric dams. Destructive flooding, soil compaction, depleted ground-water reserves, and invasion of nonproductive vegetation seriously threaten habitability of the land in many areas. Of broader concern are the possible effects of deforestation on climate and

diminished biological diversity brought about by loss of plant and animal species.

Forests represent a potential source of income and employment for people in many of the poorest countries in Asia, Africa, and Latin America, where low living standards now pose threats to political stability. In some cases, forests offer the only source of products for export; yet, forest land is needed for production of food, and further conversion to cropland and pasture appears inevitable.

The demand and supply situation is particularly serious in the woodlands and savannahs of the tropics and subtropics where 90 percent of the people depend upon wood for heating and cooking. There is also heavy dependence upon shrubs and grasses for grazing livestock. Large areas in these regions are being turned into uninhabitable desertland by constant removal of fuelwood and by overgrazing. If this kind of change is not reversed by the year 2000, at least an additional 250 million people could be without wood for minimal heating and cooking needs. This will mean that more and more animal dung and crop residues will be burned for fuel, a practice which is already depleting and improverishing soil resources.

Resource Base

There are no reliable data on the exact area of forest and range lands in the world. Estimates indicate there are about 6.2 billion acres of forest and another 3.0 billion acres of open woodlands and savannahs. Data available for many large countries indicate there are also huge areas of nonwooded grasslands.

Opportunities

Under more intensive management and with proper use that protects the environment, forest and range lands in most parts of the world have the capacity to meet prospective increased demands for products in the decades immediately ahead.

Wood supplies can be increased and extended by:

- -- Regenerating nonstocked areas with suitable species.
- -- Using management, control, and harvest practices that reduce losses from natural causes, undesirable vegetation, fires, insects, and disease.
- -- Harvesting mature stands and regeneration of harvested areas.
- -- Converting existing vegetation to more desirable species.
- -- Applying intensive management practices such as planting genetically improved stock, spacing control, and fertilization.
- -- Establishing plantations of fast-growing species to provide fuel in deficient areas.
- -- Utilizing wood residues.
- -- Improving harvesting and processing techniques.

-- Increasing efficiency in end uses, including charcoal conversion and heating and cooking practices.

-- Extending the useful life of wood products.

Forage supplies can be increased by:

-- Improving grazing practices such as controlling the intensity of grazing, rotating livestock between units, improving water supplies, and fencing to manage livestock use better.

-- Seeding palatable grasses to increase forage production.

-- Controlling noxious weeds, poisonous plants and shrubs, and insects and diseases.

-- Utilizing intensive management techniques such as genetically improved seed, fertilization, and irrigation.

More extensive use of agrisilviculture systems designed to produce annual plants, bushes, vines, and trees can increase supplies of wood, food, and animal products.

Research efforts can do much to increase the supplies of wood and forage by:

-- Developing new and better ways to manage forest and range lands.

-- Developing new and improved plant varieties and ways to control undesirable plants.

-- Conducting basic research needed to increase the knowledge base in tropical and subtropical land and resource management.

-- Finding ways to motivate people to improve the care and use of forest and range lands.

A large amount of technical and managerial knowledge is now available to increase the production of wood and forage. Opportunities exist to transfer this knowledge to the people who manage and use the land. Resource managers and technical specialists in the Forest Service or in collaborating universities, organizations, and agencies can train foreign nationals, both at field locations in the United States and at work sites in other countries. In 1980, about 150 foreign nationals received individualized training at such locations.

The Forest Service can mobilize specialists from within and from collaborating Federal and State agencies, universities, forest and range industries, and allied organizations to provide advisory services and technical assistance either on a short-term detail basis or on long-term resident assignment. By this means and through domestic and international programs of cooperative research and development, the United States can help deliver the scientific and technological means to increase timber and forage supplies without adverse effects on other products and uses of forest and range lands. In 1980, technical and managerial specialists spent

about 12 person-years in Forest Service-supported development assistance programs at field missions in other countries and headquarter units in the United States.

The Forest Service, along with collaborating organizations, can also facilitate the mutual exchange of scientific information and technology such as that on genetic improvements, advance methods of propagating clonal materials, and wood manufacturing and construction practices.

Finally, there are opportunities to more effectively use existing forest and range resources and meet part of the growing demands in many countries by increasing international trade. And international trade in forest and range products can be facilitated by carrying on research on markets and the factors affecting trade; establishing attaches to disseminate market information from embassies and trade missions in major trading countries or regions; and providing expert advisors and consultants on trade matters including factors such as the development of commercially acceptable quality standards and procedures that guard against the transmission of forest and range diseases and pests. In 1980, about 3 person-years of Forest Service effort went to provide technical services and research on international markets and factors affecting trade.

Alternative Goals and Implications

Alternative Goal 1

SUPPORT THE LONG-TERM MANAGEMENT AND USE OF THE WORLD'S FOREST AND RANGE RESOURCES AND THE MAINTENANCE OF INTERNATIONAL TRADE IN FOREST PRODUCTS BY RESPONDING TO HIGH-PRIORITY NEEDS FOR FOREST SERVICE CONTRIBUTIONS IN RESEARCH, TRAINING, TECHNICAL ASSISTANCE, AND TECHNOLOGY EXCHANGE.

Basis for Alternative Goal 1

This goal responds to the general direction to Federal agencies to constrain program expenditures.

Implications of Alternative Goal 1

1. Investments.--Achieving this goal will involve a continuation of current Forest Service programs and funding in constant dollars. The dollar amounts would be small. Training of foreign nationals and technical assistance assignments are largely funded by outside sources. Research and information exchange activities would require Forest Service funding.

2. Outputs.--The outputs in terms of number of people, technical assistance provided, and research will continue at the present levels.

3. Prices.--Achieving this goal would reduce, to some extent, the rates of increases in the prices of forest and range products.

4. Employment and income.--Achieving the improvements in this goal would increase the income derived from forest and range lands. Some of them would be in areas where natural resources are the only hope for a better way of life for the local people.

5. International trade.--Attainment of this goal would lead to some increase in trade in forest and range products including the export of timber products from the United States.

6. Environment.--Achieving improvements in forest and range use and management would have desirable effects on the environment and on renewable and nonrenewable resources.

7. Political stability.--Achievement of this goal would lead to some improvement of political stability in the world.

Alternative Goal 2

IMPROVE THE LONG-TERM MANAGEMENT AND USE OF THE WORLD'S FOREST AND RANGE RESOURCES AND INCREASE INTERNATIONAL TRADE IN FOREST PRODUCTS BY AGGRESSIVELY EXPANDING FOREST SERVICE PROGRAMS OF RESEARCH, TRAINING, TECHNICAL ASSISTANCE, AND TECHNOLOGY EXCHANGE.

Basis for Alternative Goal 2

This goal responds to the view that it is in the best interests of wealthy and technically advanced nations to provide aid and assistance to other nations in need of such help.

Implications of Alternative Goal 2

The implications of this goal are the same as goal 1, but on a much larger scale. Program funding needs and outputs would both increase about 50 times by 2030. Improvements in the management and use of the forest and range resource would be measurable and take place over a shorter period of time.

Comparison of International Forestry Alternative Goals and Implications

	Goals	
	Goal 1	Goal 2
	Support the long-term management and use of the world's forest and range resources and the maintenance of international trade in forest products by responding to high-priority needs for Forest Service contributions in research, training, technical assistance, and technology exchange.	Improve the long-term management and use of the world's forest range resources, and increase international trade in forest products by aggressively expanding Forest Service programs of research, training, technical assistance, and technology exchange.
	Implications	
Forest Service programs	Continue to carry on research and respond at the 1980 level to requests from other countries and organizations for training, technical assistance, and exchange of technology	Greatly expand research on international trade and tropical resources, the exchange of technology, and training and technical assistance to other countries and organizations
Investments	Continue Forest Service investments in international activities in constant dollars	Increase Forest Service investments in international activities 50 times by 2030
Outputs	Continue providing people, technical assistance, and research at current levels	Increases in outputs would be proportional to program increases
Prices	Reduce, to some extent, the rates of increase in the prices of forest and range products	Significant reduction in the rates of increase in the prices of forest and range products
Employment and income	Increase the income derived from forest and range lands	Significant increase in income derived from forest and range lands
International trade	Some increases in trade in forest and range products including the export of timber products from the United States	Significant increases in trade in forest and range products, including the export of timber products from the United States
Environment	Some desirable effects on the environment and renewable and nonrenewable resources	Significant desirable effects on the environment and renewable and nonrenewable resources
Community	Some improvement of political stability in the world	More improvement of political stability in the world

Needs and Opportunities

Protection includes all activities on public and private land that help prevent the loss of natural resources, natural resource productivity and renewability, facility maintenance, environmental quality, and worker and visitor safety. Support includes activities that protect these values during specific development projects such as the protection of soil quality during a timber harvest. Support activities do not primarily benefit a single resource but are necessary to maintain and facilitate outputs of other resources.

Prudent landowners protect the productivity of their land and resources and the investments they have made. This protection can be self-administered and financed, for example, road, fence, or building maintenance, or it can be administered as a public service. Further, some landowners protect an effective land base by exchanging land or purchasing additional lands. Values can usually be protected and the impact of human activities lessened when technical specialists, such as soil scientists and wildlife biologists, assist landowners and managers by devising and applying scientific and technological developments.

Protection and support activities are essential for the cost-efficient production of timber, water, minerals, forage, recreation, wildlife and fish. These activities maintain the quality of air, soil, wilderness, occupancy developments, scenery, cultural resources, safety, and property. In aggregate, they represent about one-third of the Forest Service resources used to accomplish its programs.

The Demand and Supply Outlook

Projected increases in population, income, and economic activity will intensify the use of and demand for natural resource products from private and public lands. More intensive use of these resources results in corresponding increases in protection and support activities.

Land use

For over 20 years, an average of 4.6 million acres of forest and range lands have been converted annually to other uses (such as cropland, urban development, highways, reservoirs). But while the Nation is experiencing a reduction in available forest and range land acres, the demands for their uses (such as wilderness, wildlife, timber) are steadily increasing.

Soil

Soil is basic to agricultural and forestry production. The quantity and quality of the Nation's renewable resources are dependent on the quantity and quality of the soil resource. The prospect for increasing agricultural and forestry production requires conservation and enhancement of soil productivity. Soil productivity is reduced by erosion, land use conversion, loss of nutrients, compaction, water table changes, or by the accumulation of toxic substances. Recent estimates by the U.S. Department of Agriculture's Soil Conservation Service, in their RCA Appraisal (part 1, table 3D-5) show an average annual soil loss of 1.18 tons/acre

on all non-Federal forest lands, 0.63 ton/acre on ungrazed lands, and nearly 4 tons/acre on grazed lands.

Air

The Nation's air quality is improving, although serious problems exist in many areas. Forest and range fires emit thousands of tons of particulates into the air each year. Although prescribed fires help prevent destructive wildfires, which usually have a more serious air quality impact, they have raised concerns about excessive or unnecessary air degradation.

Air pollutants transported from industrial and urban centers can adversely affect public use and enjoyment of forest and range land resources. Public demand for clean air remains at a high level.

Visual

Visual quality is becoming increasingly important to National Forest visitors. As the level of developments that would affect visual quality increase, it is important to manage this resource to improve quality where practical and to reduce adverse impacts where realistic and feasible.

Cultural

Historic and prehistoric cultural resources are valued as a way to understand past life and to understand modern life better. In addition, certain lands have a religious significance to Native Americans that dictates special management when these lands are in public ownership. As nationwide development increases, the potential for adverse impacts on cultural resources increases. Cultural resources must be identified and managed to control these impacts.

Occupancy Developments

Residences, resorts, powerlines, pipelines, roads, and other improvements will continue to be built. These developments raise two concerns. First, protection costs for these lands increase as they are developed. Second, the developments themselves must be maintained or replaced periodically.

Pest Management

Pests of all kinds including insects, diseases, and unwanted plants and animals detract from the quality, productivity, or safety of forest and range lands. Actions are necessary to prevent losses caused by these pests. In addition, the Forest Service maintains capabilities to respond with biological, chemical, and mechanical control measures to serious outbreaks as they are detected. While the use of pesticides has been an important part of this work and has been carefully regulated, there is public debate about the health and environmental effects of chemical and biological pest control.

Fire

Forest and range fire management protects life, property, and wildland resources from wildfire. Prescribed fire is used, where appropriate, to protect and enhance the productivity of forests and

associated resources. As resource activity increases, so does the threat of damaging fire. In 1980, $117 million of losses were caused by fires on land inside National Forest protection boundaries.

Law Enforcement

The Forest Service cooperates with State and political subdivisions in the enforcement of laws, ordinances, and regulations involving the protection not only of natural resources and facilities, but also of persons and their property when they are visiting National Forest System lands. The need for improved law enforcement is evidenced by increasing vandalism and violence on public and private land. In 1980, approximately 60,000 crimes were responded to on National Forest System lands by cooperative law enforcers, compared with approximately 35,000 in 1977.

Social, Economic, and Environmental Effects

The current trend of increasing demands for products from public and private forest and range land may have adverse social, economic, and environmental effects unless investments are made to protect natural resource quality.

Continued conversion of forest and range land to nonagricultural uses may require purchase or exchange of land in order to consolidate ownership or acquire key tracts for public use. Acquisition of rights-of-way to allow access to public and private land may also be needed. These ownership adjustments are expensive and can cause local concern about ownership patterns.

Reduced soil productivity on forest and range lands could lead to changes in employment and community stability. Unless management practices that maintain and improve long-term productivity of a continuous high-level flow of products and services are chosen, living standards could deteriorate.

As air quality nears the national standards, new or additional activities will be restricted and more stringent emission controls will be needed. The result will probably be higher costs to the public.

Government actions aimed at the preservation or limited development of unmodified (natural) landscapes will place greater demand and value on land that can be developed.

Conflicts between development activities and cultural resources will cause increased development costs, cultural resource losses, or both.

If public use facilities, such as roads and campgrounds, are not protected and maintained, unnecessary losses and public hazards will occur.

Intensified demand for forest and range production will sharpen the need for integrated pest management. The net result will be increased expenditures to protect or maintain productivity consistent with the value of potential losses. Concern for the potential long-term effects of pest control methods or results will increase.

Resource Base

There are 736 million acres of forest land and 820 million acres of rangeland in the United States. In 1977, lands in private ownership, plus relatively small areas in State, county, and municipal ownerships, amounted to about 53 percent of the total forest and range land area in the Nation.

The Forest Service has management responsibility for the 190 million acres of National Forest System lands and waters. About 30 million of these acres (16 percent) are not fully available for use because of unmarked boundaries, limited access, unauthorized uses, or poor ownership patterns. The National Forest System contains many facilities needed to support resource administration, public use, and utilization of the resources: 270,000 miles of road, 1,500 large dams, 22,000 buildings, 272,000 miles of property boundaries, and an unknown number of cultural resource sites.

The Forest Service also has responsibility for cooperative programs and for forest and range research. Nationwide cooperative forestry programs are conducted with State forestry agencies to protect and improve some 1.4 billion acres of forests, rangelands, and related resources in private and non-Federal public ownership. A comprehensive research program, in cooperation with other research agencies and institutions, is aimed at solution of problems relating to management of all types and ownerships of forests and associated rangelands and to uses of these natural resources.

Opportunities

-- Provide a cost-efficient fire management program on National Forests, including use of prescribed fire, to protect, maintain, and enhance production and quality of resources.

-- Provide for cost-effective fire protection on private and other public lands through technical assistance to State and local governments, including rural wildfire training and improved fire response capabilities.

-- Provide technical assistance to reduce fire hazards and risks at the urban-wildland interface through education, fuel modification, hazard reduction, and vegetation management, including effective use of prescribed fire.

-- Provide technical assistance, training, and new technology to Federal, State, and private cooperators for application of integrated pest management programs.

-- Implement an integrated pest management program on National Forest System lands to protect, maintain, and enhance the production and quality of forest and range land resources.

-- Improve or restore soil productivity through application of soil management practices. Inventory and interpret the soil resource.

-- Reduce soil erosion by timely revegetation of disturbed areas and application of improved engineering and land management technology.

-- Maintain or restore visual character and significant scenic values through resource management techniques.

-- Reduce air pollution from forest and range activities through research, development, application, and timing of improved forest and range land management practices.

-- Prevent or reduce air pollution damage to forest and range land resources by cooperating with air quality regulatory agencies to ensure pollutant effects on those resources are considered in the regulatory process. Through research, develop better predictive capabilities and understanding of air pollution and its effects on forest and range land resources.

-- Maintain a land ownership adjustment program that optimizes ownership patterns, reduces administrative costs, eases resource development, prevents trespass, and resolves management needs with adjacent owners.

-- Reduce trespass and promote good neighbor relations by marking and maintaining property boundaries.

-- Inventory, protect, and interpret appropriate cultural resources.

-- Improve health and safety of forest and range land visitors through cooperative law enforcement, water and sanitation improvements, road maintenance, public safety, and education programs.

-- Incorporate and monitor protection and support activities through National Forest land and resource management planning and State forest resource planning efforts.

-- Aid States in the identification of prime forest lands for retention and improved long-term management.

-- Encourage retention of private forest and range lands for forest and agricultural use through involvement in local and State land use planning, recommendation of tax policy revisions, and education in the commercial potential of these lands.

-- Maintain Forest Service facilities needed to protect and support management activities on National Forest System lands.

-- Conduct research on insect and disease, fire, soil, water, air, and watershed protection to improve management capability and resource quality.

Goal and Implication

Protection and support activities are an essential part of any program carried out in natural resource

management. Because of the close relationship between protection and support activities and the goals in the other opportunity areas, only one goal and implication statement is presented.

Protection and Support Goal

PROVIDE LEADERSHIP IN FIRE, PEST, LAND USE, FACILITY MANAGEMENT, AND OTHER SUPPORTING ACTIVITIES ON NATIONAL FOREST SYSTEM LANDS COMMENSURATE WITH NATIONAL RESOURCE GOALS. PREVENT RESOURCE LOSS AND DAMAGE AND EMPHASIZE MITIGATING EXISTING LOSSES AND DAMAGE. COOPERATE WITH LOCAL, STATE, AND OTHER FEDERAL AGENCIES AND PRIVATE LANDOWNERS IN RURAL FIRE PREVENTION AND CONTROL, FOREST PEST MANAGEMENT, AND OTHER RESOURCE PROTECTION PROGRAMS.

Basis for Protection and Support Goal

This goal provides an efficient level of protection to maintain the value of forest and range land resources and facilities for the long term. It recognizes congressional direction to preserve the value and integrity of Federal land and resources and to sustain and improve the productivity of Federal lands. It reduces the risk of losing future land and resource productive opportunities, both marketable and environmental. The goal recognizes the importance of continued local, State, and Federal cooperation to support broad national interests in the management of the Nation's forest resources.

Implications of Protection and Support Goal

1. Investments.--Investments on National Forest System lands will meet basic responsibilities of landownership, such as boundary posting and visitor safety, and be commensurate with the level of activities for resource production. Forest Service participation with government agencies and private landowners to protect forest and range resources from fire, forest pests, and loss of soil productivity would continue.

2. Standards and activities.--Activities will be carried out to ensure that landowners meet their basic responsibilities to maintain environmental quality, protect resources, maintain facilities, and meet public safety standards. Such activities are to:

a. Provide a level of fire protection that in cooperation with others, efficiently meets long-term land and resource management goals and objectives, including the enhancement of both environmental and renewable market resource values. On National Forest lands, there are opportunities for gain in efficiency through redistribution of funding levels. For State and private lands, the first step is joint Forest Service and State assessment of existing State programs and opportunities to improve their effectiveness.

b. Reduce resource damage on forest and range lands by forest pests through integrated pest management. Limit damage where costs do not exceed the value of potential losses and emphasize protection against the 10 most damaging pests by the year 2000 and an additional 5 through 2030. Carry out detection, evaluation, and suppression activities to

apply integrated pest management for major pests on both Federal and non-Federal lands.

c. Limit soil loss to a level that maintains productivity of the site and initiate projects to restore and improve soil productivity. Continue to provide technical asistance to private landowners, including cooperative assistance for watershed improvement projects on selected State and private lands where long-term productivity is threatened.

d. Complete soil resource inventory to levels needed for resource management.

e. Develop the capability to predict and determine key air pollutant emissions from forest and range land managment activities by 1990. Manage National Forest activities to limit pollutant emissions and encourage forestry activities on State and private lands to meet State and Federal air quality standards. Cooperate with air regulatory and other appropriate agencies to prevent damage to class I forest and range land by air pollutants emanating from non-Forest Service sources and to reduce damage where major impacts are occurring on National Forest resources.

f. Complete assignment of all visual quality objectives by 1990. Prepare detailed visual resource planning by 1990. Provide visual impact analysis support to improve the level of visual quality on all forests.

g. Survey, mark, and post 60,000 miles of National Forest property boundaries by 1990 or a greater number as needed for resource management. Maintain 10 percent of existing property boundaries each year. National Forest boundaries will be surveyed and marked prior to resource management activities adjacent to private lands. Give priority to boundaries that may encroach upon neighboring ownerships. Also, mark boundaries to address critical resource management needs, identify public lands for visitors, facilitate administration, and meet other management concerns. (Note: The Forest Service completed 6,000 miles of boundary location and marking in 1980.)

h. Resolve all existing trespass cases and reduce new trespass cases to 200 per year by 1990.

i. Acquire 1,200 road and trail rights-of-way per year until 1990 to improve access to National Forest land for public use and administration. Acquire other access as needed by 2030.

j. Acquire land for National Forest purposes where the public need is urgent. Pursue land exchange when high-priority offers are made.

k. Seek optimum landownership patterns to reduce administrative costs, prevent trespass, reduce need for right-of-way acquisition, and reduce the need for property boundary surveys.

l. Complete cultural resource surveys of National Forest lands prior to development activity or by 2030. Preserve and protect significant cultural resources and provide interpretation where appropriate.

m. Provide a level of maintenance that protects the investment in National Forest roads and trails. Construct and maintain roads and trails to reduce costs to users, permit full public access to National Forest lands (coordinated with dispersed recreation goals), and minimize damage to other resources.

n. Provide timely maintenance for needed dams, buildings, and other facilities to protect investments from deterioration and to ensure safe operation.

o. Provide timely action on applications for use of National Forest land and efficient administration of existing use permits and leases.

p. Aid States in identifying prime forest and range land. Encourage State Forester participation in local and State land use planning to discourage conversion of prime forest and range land to other uses, recommend revisions in tax policies, and emphasize the commercial potential of these lands. Meet needs for land for community expansion where this need outweighs the value of continued Federal landownership.

3. Prices.--This goal has high potential to reduce the rate of long-term price increases due to losses from fire, forest pests, soil erosion, and other sources.

4. Economic efficiency.--Protection programs minimize total cost and net resource value change, subject to meeting long-term social and productivity objectives.

5. Nonrenewable resources.--Energy resource uses will be highest in the short term. There may be reduced use in the long term as fewer actions are needed to correct impacts associated with other resource programs.

6. Renewable resources.--Productivity increases would result in higher quality and quantity of renewable resources.

7. Community, employment, and income.--Improved protection and support activities will help sustain community economies dependent on natural resources. Where quality of life is related to a well-maintained natural resource base and to opportunities for communities to use those resources, quality of life will benefit.

8. Technology.--Intensify research to reduce unit costs, increase unit benefits, and develop more cost-effective protection and support methods. Make technology available to users to ensure that primary goals are achieved. This includes research on insects and disease that emphasizes integrated pest management; improved fire risk forecasting and fuel management; use of prescribed fire as a tool; and mitigation of pollution from disturbed lands, acid rain, air, and water.

9. Air.--Develop the capability to predict and determine key air pollutant emissions from forest and range land management activities by 1990. Manage National Forest activities to limit pollutant emissions and encourage forestry activities on State and private lands that meet State and Federal air

quality standards. Cooperate with air regulatory and other appropriate agencies to prevent and reduce damage to all affected National Forest lands by air pollutants emanating from non-Forest Service sources.

Note: Because only one goal is presented for the Protection and Support opportunity area, no comparison table is presented.

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